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ON CLAIMS AND ALLOWANCES.

THE rubber trade is in many respects unique, but in no direction, perhaps, does it bear the impress of singularity more notably than by the general allowance of both usual and unusual damage claims. When a jobber is able to boast that he makes most of his profit by filing claims for short weight, mistaken measurements, or unsatisfactory goods, where such features do not exist, and that the claims are allowed because of the seller's eagerness for business, it would seem that it were time to call a halt. No doubt there are rubber manufacturers who will lose customers rather than entertain unfair claims, but there are many others whose policy is to satisfy almost any claim, believing that sooner or later they will have the opportunity to "get even." Such a course is a definite damage both to manufacturer and jobber in that it makes them both dishonest. A manufacturer who sells goods dating ten months ahead and to whom the jobber returns those goods because they will not fulfill his extravagant and unnecessary guarantees, is injuring himself, his stockholders, and, indeed, the whole trade, and is not making money at that. What is needed is backbone and fairness, and the conviction that it is as righteous for a man to be fair to himself as it is for him to be fair to his neighbor. The foregoing may sound, perhaps, a trifle bitter, and the writer may be accused of scolding, but if it were translated into the vernacular of the suffering manufacturer it would be so full of dashes that it would look like a message in the Morse alphabet.

COMPOUNDING FOR SUBSTITUTES.

THE use of this or that "substitute" is not a matter to be decided upon by the rubber factory superintendent in a single day, or as a result of only one experimenting. Nor must all substitutes be regarded as forming a single class, and therefore all to be accepted or rejected on account of a given test. It would be a most desirable condition, indeed, if no necessity existed in the rubber industry for going beyond the field of supplies for natural gum, in search of materials whenever there happens to be a deficiency, but this is not, after all, a new situation which confronts the manufacturer.

It existed half a century ago, when the rubber factories, accustomed only to handling the Pará grades, became obliged to adapt their methods and their compounds to the then new rubbers from Assam and Java. For this matter, the same thing has been going on ever since, until, instead of merely buying "India-rubber," the manufacturer must distinguish between hundreds of commercially known grades, which number is increased every year, from Africa, the East Indies, and even the American continent.

The effect of the attempts to utilize various new sorts of rubber, oftentimes vexing to the extreme—but rendered necessary either by the scarcity of Pará rubber or by the demand for cheaper goods than could be produced from Pará rubber—has been to stimulate a wonderful degree of ingenuity in factory superintendents and a vast amount of study by chemists, to the end that compounds should be

discovered to suit each different quality of gum. The situation was still more complicated by the introduction of reclaimed rubber, of which alone there are now many grades produced. Hence it will be easy to understand that the real secret of success in the use of rubber substitutes will be found, not merely in the nature of the material itself, but in the way in which it is compounded.

The manufacturer who, in the desire for economical production, simply displaces a certain amount of crude rubber from his mixing and introduces a like amount of substitute, need not be surprised at an unfavorable result, in case he should fail to modify his compounds to suit the difference between the nature of the substitute and that of rubber. In other words, until a substitute has been discovered which is an exact equivalent of rubber in every respect, whatever material is used for this purpose must require a special compounding formula.

Apparently the rubber industry of some other countries has attained more success in the use of substitutes than is true in the United States, particularly in respect of the durability of the goods produced. It doubtless would be found, upon investigation, that this success has been due to the care given to finding out the right compounds to be used, both as to ingredients and to proportions.

RUBBER PLANTING SCHEMES TO AVOID.

WE commend to all who are seeking to interest capital in the establishment of rubber plantations the propriety of quoting from current reports by scientific investigators of this subject, and by practical planters who from time to time make their results known, rather than from the writings of the late Señor Don Matias Romero, now unable to resent the unwarranted use which is made of his old letters and essays. The Chiapas Rubber Plantation and Investment Co., of San Francisco, use a page of the San Francisco *News Letter* of September 15, 1900, to exploit their business, putting in quotation marks a garbled extract from an essay written by Señor Romero, on the profits possible from planting rubber, followed by this comment:

He ought to know, for after spending \$57,000 on a [rubber] plantation he sold it to an English syndicate for \$1,250,000, and the syndicate is making good dividends on that amount.

In this connection it is interesting to read, on page 374 of Señor Romero's "Coffee and India-Rubber Culture in Mexico" (New York: 1898), after a mention of his having planted 100,000 rubber trees in Soconusco in 1872, the following explicit statement:

In 1875 my trees were prospering and in a very satisfactory condition; but as I had to abandon the place at that time, when the trees developed the natives tapped them, destroying them as they do with the large wild trees, and I could not therefore have the advantage of the experience drawn from my plantation. I have not heard of any plantation on a larger scale being made in Mexico, except one on the southern coast of Oaxaca, called "Esmeralda," which I have not seen, and of which I have not reliable information.

This same "Esmeralda" plantation, by the way, was the basis of a company "floated" in London three years ago—India Rubber (Mexico), Limited—by means of representations so fraudulent as to lead to several actions at

law and a public scandal, to say nothing of discrediting investments in rubber enterprises in general.

The Chiapas company, in the *News Letter*, give views of rubber tree tappers at work on their plantation in Mexico, and say: "The last shipment of rubber from Chiapas brought \$1.02 in New York," evidently with a view to having it appear that it was rubber gathered from trees cultivated by them. Without stopping to question whether any Mexican rubber was ever sold in New York at \$1.02 a pound, we may remark that in the pamphlets received lately by THE INDIA RUBBER WORLD, in answer to charges published in San Francisco against the methods of the Chiapas Rubber Plantation and Investment Co., the only claim as to progress made in even starting a plantation on their estate is one by a committee of investigation, who saw a nursery containing, it was estimated, 300,000 or 400,000 seedlings, from a planting made in June last. One pamphlet, signed by J. W. Ellsworth, managing director, in answer to the question why he had not sent home some rubber from the wild trees reported to exist on the estate, said: "We are depending on the fruit for seed to plant our plantation; hence, until we have discovered more large rubber trees, the fruit is of more value to us than a small amount of rubber to lie on our desk."

Thus far it would seem that the planting done by this company has been done only on paper, and that paper not such as will bear very close scrutiny.

We have received the prospectus of another so-called rubber plantation company, inviting subscriptions to their stock based on the promise of dividends beginning with 5 per cent. the first year and increasing to 50 per cent. the seventh year—a total of 142 per cent. in seven years. It is unnecessary to warn sane people against investing in an enterprise so palpably unbusinesslike; such figures will appeal only to persons of the class who buy "gold bricks." But we mention the case to say that if there were nothing else to discredit the company, its prospectus is signed by a man who, two years ago, signed another statement, which was widely published, and of which the following manufactured information is a sample:

Chief among Mexico's rubber estates is "La Esmeralda," at Soconusco, state of Chiapas. This farm is owned by Hon. Matias Romero, the present minister to the United States from Mexico, and contains 1,000,000 rubber trees. The portion of the plantation now producing yields its owner an immense annual income. When all the trees arrive at the tapping age, Minister Romero's net profit will not fall under \$1,000,000.

These matters are referred to because THE INDIA RUBBER WORLD is constantly in receipt of requests for advice about investing in the cultivation of rubber. Our present advice is to avoid everything in relation to this business which calls up the name of Romero—an estimable gentleman who, unwittingly, has been the cause of much injury to poor people. There are sound and unsound gold mining companies, and the same thing may be expected to be true of planting enterprises in the tropics, as it has been already in the fruit interests of Florida and California. And it will not follow, because profits from rubber planting are possible, that every scheme is a good one.

WASSEL LEE
JAN THAS

THE SUBJECT OF THE COAGULATION OF RUBBER again receives attention in our pages, for the reason that we believe it to be one of great coming importance as bearing upon the quality of the chief raw material of the rubber manufacture. The desirability of having rubber cured without the admixture of dirt, bark, and other foreign substances is self-evident, and under more intelligent supervision than formerly obtained it is possible to secure cleaner rubbers. But a new question is now opened, with regard to the possibility of so treating the rubber milk as to affect favorably the quality of the rubber produced. As everybody knows, only a certain percentage of the milk derived from the trees is rubber of any sort, and one object of all the methods of coagulation now in use is to get rid of the watery elements which form 30 to 40 per cent. or more of the total volume of the rubber milk collected. In connection with the scientific study of the rubber planting question, it may be found possible, either through the choice of coagulating agents or by mechanical means, not only to prevent the inclusion of dirt and bark, and to thoroughly eliminate all the watery elements of the rubber milk, but also to produce rubber having a small proportion of resinous matters. The whole subject is one which, more or less directly, deserves the interest of all who are engaged in any branch of the rubber business.

IT MUST HAVE BEEN GRATIFYING to the descendants of Charles Goodyear to read the letter from the celebrated English house of Macintosh, which appeared in the proceedings of the New England Rubber Club, and which contained this statement: "We naturally have held the name of Charles Goodyear in high esteem, as the original inventor of the vulcanizing process, without which our trade could not have attained its present dimensions, and rubber would have been of small account in the world." Goodyear carried to his grave the feeling that due credit had not been given to him in England for his discovery, and even that he had met with unfair treatment there in regard to it. But there could be no fuller or more graceful acknowledgment of his standing as the discoverer of vulcanization than appears in the letter above quoted from the oldest and most celebrated rubber works in Europe, if not in the world.

IT IS STRONG TESTIMONY to the good qualities of India-rubber for deep sea insulation work which is reprinted on another page, from a late official report of the chief of the signal corps of the United States army. This branch of the government, by the way, is of much greater extent and importance than most persons probably are aware, and General Greely doubtless is not claiming too much when he says: "In connection with cable operations in Cuba and the Philippines the signal corps has had practical experience in the construction, installation, and operation of cables such as has never been enjoyed by any other body of officers and men, outside of the few experts of the great cable corporations of the world."

AND NOW BORDEAUX is becoming a rubber market of some importance, Havre already having attained that distinction. France to-day controls so much rubber producing territory that its product alone will be sufficient to support a considerable trade in crude rubber, and this naturally will converge to French ports. But the Havre market does not depend upon French colonial rubbers alone, the arrivals direct from Pará at that port having amounted to 2024 English tons in 1898-99 and 2390 tons in 1899-00. The crude rubber trade seems likely to become still more divided up, by the establishment of a large

market at Hamburg, as a result of the new German shipping facilities direct to the Amazon. The bearing of all this upon the rubber situation as a whole is that the achievement of bringing the whole crude rubber movement under a single control—which has been attempted a few times and proposed oftener—apparently becomes every year a more difficult matter.

TESTIMONY CONTINUES TO DEVELOP that there is India-rubber in the Philippines. In this issue appear some statements by an American electrical engineer who asserts that he has seen it, and, what is more, a considerable quantity of it has been put to commercial uses by the natives and also sold to Spain and Japan. We should advise the Japanese rubber manufacturers, however, that before they can hope to compete with the United States in their industry they must give up trying to use the Philippines rubber made by the native process of boiling it in discarded sugar kettles with glue made from the hoofs of the caribou.

RUBBER MAKING IN THE PHILIPPINES.

WRITING in the *Western Electrician* (Chicago, November 24) G. D. Rice asserts that Gutta-percha trees grow in large numbers in the Philippines, but as he speaks of the product as "rubber" it is not clear what the trees are that he reports having seen. The product of these trees is prepared for various uses by the natives, the general practice being to mix gum ammoniac, glue, or gelatine with the sap of the trees. The glue used is made by the natives from the hoofs of the caribou. The mixture takes place in old iron sugar kettles, fixed up in rough masonry, wood or coal being used as fuel. Nothing is said about how the rubber sap is obtained in the first place, or its condition when poured into the mixing kettles, but the compounding varies according to the different uses to which the "rubber" is to be put.

After boiling, the contents of the kettle are emptied into vats and allowed to harden somewhat, after which the mass is poured upon a slab of stone and rolled into sheets with a hardwood roller. Or, the material having once hardened, is again placed in the kettles and melted to a certain consistency, and then run into sand molds and cast into various forms—cubes, cylinders, and the like. Mr. Rice saw as many as a hundred molds in a single establishment. As for uses of this rubber, Mr. Rice says that native shoemakers in the villages make a good many shoes with wooden or rawhide or leather soles, the uppers being made of rubber sheets, sewed together. Since the American occupation of the Philippines, and the introduction of electricity for many purposes, some of the wires have been insulated by wrapping them spirally with strips of native rubber. The military signal corps wants considerable rubber in its work, and purchases that of local manufacturers, if it is suitable. It is not surprising to learn that this rubber "lacks elasticity and the general desirable features required in rubber for electrical purposes, or, in fact, for vehicle tires."

At the same time it is asserted that the rubber works in Japan have taken considerable quantities of the Philippines rubber, melting it and combining it with rubber obtained from other sources. Spain also formerly took considerable of the rubber products of the Philippines.

DANIEL SUTLER, who died November 25 at Mount Holly N. J., at the age of 71, was until recently a member of the firm of Sutler & Miller, dealers in India-rubber goods, on Commerce street, Philadelphia. He was interested also in various financial institutions in Philadelphia and New Jersey.

A MINERAL FOR RUBBER COMPOUNDS.

ELSEWHERE in this paper is the advertisement of the Raven Mining Co. (Chicago), who offer a mineral product for rubber compounds, insulation, and iron and marine paints. The trade name given to this product is "Kapak."

The Raven Mining Co. has confined itself to the treatment of Wurtzilite (Elatelite) and has trusted its development to no speculative operation. Wurtzilite is found in about 100 small fissure veins in the Wasatch mountains in Utah, and is confined to an area, the extent of which is not more than 50 by 80 miles. The veins are from $\frac{1}{4}$ of an inch to 12 inches in width and are in a shale formation. The approximate deposit is 100,000 tons.

Within fifty miles of these deposits, other hydrocarbons, such as gilsonite, lusterite, and asphaltum are found in large quantities, and the marked difference between these several deposits and Wurtzilite is traceable to the rock formation, none of them being found in shale except Wurtzilite. Another marked distinction between these minerals is the temperature necessary for reduction—asphaltum and gilsonite becoming liquid at a temperature from 140 to 220 degrees, while Wurtzilite requires a heat for reduction of from 500 to 900 degrees, Fahrenheit.

The rock formation determines the fact that the shale retained in the Wurtzilite a larger degree of its formative qualities than remained in the gilsonite, as the sand stone formation in which gilsonite is found permitted the escape of a large percentage of its original component parts, and the treatment of gilsonite by the introduction of foreign oils in the attempt to make it a comparative product to Wurtzilite, antagonizes a well settled principle of physical law, that by artificial methods cannot be created a product of the same merit as nature produces.

The hydro-carbons found in the Barbadoes, Trinidad, Australia, Hungary, and England, all admit of an easy analyzation and heat reduction, and all of them, including the deposits in Utah, California, Texas, and Mexico, except Wurtzilite, yield readily to chemical reduction.

The laboratory work on this material began in April, 1897, and the writer of this article saw the first finished product within a year from that time. It showed such merit that THE INDIA RUBBER WORLD desired to make mention of its peculiar characteristics, but was not permitted to do so. The present company was formed and a lease obtained from the Uintah and White River Ute Indians, and the lease was approved by the Hon. C. N. Bliss, the then secretary of the interior, in November, 1898. The company then began a systematic and scientific development of this mineral, and it has rarely happened that so large an expenditure has been made without an effort on the part of the projectors to early solicit reimbursement by offering their product and often their property to the consuming public. But the policy of this company was declared to be that not one pound of Kapak should be sold until it was found to have commercial merit. A thoroughly equipped plant, including reduction furnace, grinders, compounding kettles, washers, mills, mixers, vulcanizers, and tubing machines, all operated by skilled men, under the direction of chemists and engineers of the highest talent, was the method adopted to determine whether it had a property of commercial use and value. The demonstration has been made full and complete and the practical and valuable uses to which Wurtzilite may be put have been determined.

It is needless to discuss the demand for some product that will in a measure take the place of crude gums and reclaimed rubber. The consumption of crude gum in the United States

for the year 1900, is approximately 60,000,000 pounds, and the compounds and substitutes used are several times as great. The demands for and consumption of rubber products are increasing, and the supply of crude gums is growing less. If the Raven Mining Co. has found what its developments seem to justify, it would appear that the rubber manufacturing interests will find a relief from oppressive prices in crude gums.

Among the stockholders of the Raven Mining Co. are Charles F. Pfister, Henry C. Payne, William Bigelow, H. W. Heinrichs, of Milwaukee; Cyrus H. McCormick, W. S. Potwin, O. H. Morgan, B. C. Chambers, David B. Jones, of Chicago; George R. Sheldon, of New York, and Gilbert Tolman, of Boston. The officers of the company are Charles F. Pfister, president; William S. Potwin, vice president; O. H. Morgan, treasurer; and Leroy D. Thoman, secretary. Lowell F. Lindley, who for many years was with the Mechanical Rubber Co., is the superintendent of factory and sales department.

NEW TRADE PUBLICATIONS.

THE latest illustrated price list of "Druggists' Sundries and Miscellaneous Rubber Goods" of the HODGMAN RUBBER CO. (New York) is exceedingly comprehensive, with respect to the number and variety of products mentioned; the arrangement of articles and details concerning them is convenient; and the illustrations are calculated to give an excellent idea of the appearance of the goods described. The Hodgman line is particularly complete in air goods, rubber bags for all purposes, sheeting, and the like, though it embraces all the staple articles in druggists' sundries, and many specialties, in addition to a large production of elastic bands. [9" x 5 $\frac{1}{2}$ ". 59 pages.]

"LOOKING Forward" is an interesting pictorial booklet issued by THE VICTOR RUBBER CO. (Springfield, Ohio), with the date 1900-1999. First referring to the great progress made in recent years in so many lines of development, including the improvements in rubber vehicle tires, the author of this pamphlet has given play to his imagination in picturing the effect upon the conditions of life a century hence of the universal use of such tires which probably then will prevail. [7" x 9 $\frac{1}{2}$ ". 20 pages.]

GOODYEAR TIRE AND RUBBER CO. (Akron, Ohio) issue an illustrated catalogue of "Rubber Tires" for vehicles of every kind, including pneumatic (single tube), solid, and cushion types. The methods of manufacture are commented on, and prices are given. [9" x 6". 24 pages.]—The same company's new catalogue of "Bicycle Tires" embraces illustrations of single tube and detachable tires, the former embodying some new features for which patents were obtained during the past year. A puncture proof tire is also illustrated, together with various bicycle sundries in rubber. [8" x 4 $\frac{1}{2}$ ". 24 pages.]

NORTH BRITISH RUBBER CO., LIMITED (Edinburgh), under the title "Locomotion Past and Present Illustrated," present in attractive form an account of their "clinch" carriage tires—pneumatic, solid, and wired on solid—in connection with which is a series of pictures of carriages, from the earliest times to the latest. The point is, of course, to show what an important part rubber plays in the increased comfort of travel in modern vehicles. [6" x 7 $\frac{1}{4}$ ". 16 pages.]

ONE of the public schools in Woburn, Mass., where Charles Goodyear once made his home, has been renamed the Good-year school, and a local newspaper suggests that a plot of ground be set aside, curbed, and grassed over, and be named Goodyear Green in memory of the inventor.

RECOLLECTIONS OF AN OCTOGENARIAN RUBBER MAN.

By Lewis Legrand Hyatt.

MY association with the rubber trade began shortly after the invention by Charles Goodyear of the process of vulcanizing rubber, and in 1845 I joined the Ford Rubber Co., of New Brunswick, New Jersey, of which John R. Ford and Christopher Meyer were the principals, in manufacturing boots and shoes from the vulcanized rubber. Progress at first was slow. People looked at the goods with suspicion, and the experience of earlier manufacturers was by no means encouraging. A hundred pairs a day was considered good business, but the demand speedily increased, as the merits of the goods became known, until it was found necessary to lay down new machinery capable of turning out 2000 pairs a day, a number which found a ready sale.

Previous to Goodyear's discovery a rubber shoe had been made by spreading coat after coat of liquid rubber on a kind of last, or by spreading the liquid rubber on cloth. Neither plan was successful. The material was not durable enough for hard wear, became hard and unyielding in cold weather, and sticky in hot. Goodyear's discovery placed practically a new material at the disposal of the rubber manufacturer. The article made by the Ford Rubber Co. was of light design in contrast to the clumsy, heavy goods hitherto in the market. As a result the shoes were worn by a better class of people, and so became fashionable.

Soon after I commenced with the Ford company trouble arose in the trade through an infringement of Goodyear's patent. The chief offender was Horace H. Day, of New Brunswick, who turned out goods in such quantities that the firms manufacturing under Goodyear's license became dissatisfied and threatened to cease the payment of royalties unless he compelled Day to desist. The result was a lawsuit against Day, in which Goodyear was successful, his counsel being the famous Daniel Webster of Boston.

We soon found it necessary, however, to improve the finish of the shoes. Varnishes of all kinds were tried, but without finding one suitable, for when the elastic rubber shoe was stretched the varnish cracked or peeled off. A special varnish was made and applied to the shoe before vulcanizing, it being found that during the latter process the varnish amalgamated with the rubber and gave it a glossy finish. The surface, in appearance like that of patent leather, was as elastic as the shoe itself.

About 1851 the premises of the Ford Rubber Co. were in great part destroyed by fire. It was on a Sunday, and I took in hand the business of replacing the plant, and started that same night for Boston, to purchase the lasts, forms, machinery, etc., needed for a fresh start. Christopher Meyer took charge of the building of a new factory, and under his supervision the place was in good working order in four weeks' time, and turning out 2000 pairs of shoes a day.

In 1852 I invented a machine for making the soles of shoes. Hitherto they had been made in three layers, which had to be carefully cemented together. Often these would become unfastened in the process of vulcanization, the shoes being thus completely spoiled, since they could not be repaired after being vulcanized. My invention made the soles at one stroke, and was found exceedingly useful. It is still in constant use, nothing having been since made to take its place.

Shortly after this, in 1855, I left the Ford Rubber Co., and went to France to join Messrs. Hutchinson, Henderson & Co., an American firm who had established a large business at Montargis, where they had bought an old silk factory—a large three story building 800 × 60 feet—and were engaged in making rubber boots and shoes. Having assisted them to surmount certain difficulties which had proved troublesome, I took sole charge of a new factory they had bought in Paris, and there commenced the manufacture of rubber boots and shoes to imitate French morocco—a novelty which took well, and in which a very large business was done. This fairly established we began the manufacture of waterproof clothing, little known there at the time, making from 800 to 1000 garments a day.

A curious incident occurred with regard to these garments. It was determined to get them into the London market, and a consignment of 1000 was forwarded as a trial lot. These were seized by the custom house officials as being undervalued, and were sold by them. A second lot of 2000 were similarly treated. A third and much larger consignment was passed. Probably the custom house people had found by experience that they were not undervalued. At any rate from this time we had no further trouble, and found an

excellent market for the goods in England.

In addition to this, we began the manufacture of elastic webbing for boots, suspenders, garters, etc. Our next adventure was the making of cork carpet—now known as linoleum. All the while, however, we were making endless experiments with rubber. Mr. Charles Goodyear, son of the inventor, was engaged in this branch of the business. One novelty due to him was the introduction of rubber flowers, etc., for trimming ladies' hats. A good deal of vulcanite for dentistry was also made by us.

In 1859 Mr. Meyer came to Paris and induced me to join the North British Rubber Co., founded about two years previously by Christopher Meyer and John R. Ford. The former gentleman had a remarkable faith in the future of the rubber trade in Great Britain, and as an outcome it was resolved to establish a factory in Edinburgh. A shrewd man of business, he surrounded himself by men of means or talent on the one hand, or men of experience, on the other, and from the commencement the business proved eminently satisfactory, and it is now one of the greatest of its kind in the world. Its buildings cover five acres of ground, to which it has recently been found neces-



LEWIS L. HYATT.

sary to add another five, while its output includes, in addition to boots and shoes, belting, hose, and every form of rubber used in connection with machinery.

In 1860 I introduced at Edinburgh the manufacture of waterproof clothing, which now forms a large part of the business. The fabric consisted of two sheets of cloth between which was placed a thin layer of rubber. Our financial manager was Henry Lee Norris; then came William Ford, brother of John R. Ford, and after him Douw D. Williamson, and then William Erskine Bartlett—all Americans, and now all passed over to the great majority. The manufacturing managers were Thomas Parmelee, Mr. Harris, T. G. Douglas, and myself. Of these, Mr. Douglas still retains his connection with the business, having proved a most valuable servant throughout his career.

In 1870 I returned to America to establish the New Jersey Rubber Co., with John R. Ford and Christopher Meyer, to my association with whom I owe much of my success and much of the pleasure of my life. Of this company I became the first president. Our business here consisted in making boots and shoes, rubber carriage cloths in imitation of embossed leather, and also various articles used in manufactures. Nine years after its foundation the company received a severe check, its premises being destroyed by fire. After this I retired from the business.

I had been in harness continuously for thirty-four years, and the strain of developing a new industry and of founding new businesses had been a heavy one. I took a long and much needed holiday, proceeding to Europe and traveling on the continent for some three years. At the end of this time the pleasure of such a life began to pall, and I was irresistibly impelled to take up active work again. This time it was the manufacture of celluloid that claimed my attention. I established a large factory in Paris and succeeded in building up a large business in collars, cuffs, and other articles made from this substance. The business was very successful, and in 1886 I transferred it to London and threw in my lot with the British Xylonite Co., then under the management of Levi Parsons Merriam. This has been eminently successful, and is still ably carried on under the direction of Mr. Merriam's son, Charles P. Merriam.

This brings me to the eightieth year of my age (on February 20, 1900), still hale and still in business after a varied and chequered career in all branches of the rubber and celluloid industry. In 1894 I celebrated my golden wedding—my married life having been almost coincident with my business career, and my wife having proved an excellent partner in both, and the most cheery of counsellors and most faithful of helpmeets in the vicissitudes inseparable from a life so busy and full of varied risks and interests. She shares with me our well-earned repose at our cosy home in Stroud Green.

111 Stapleton Hall road, Stroud Green, London, November 15, 1900.

ANOTHER MEXICAN RUBBER PLANT.

A PRESS despatch from Monterey, Mexico, states that a company has been formed there for "the manufacture of rubber from a native waste shrub called guayula," and which "grows in unlimited quantity in many states and has been hitherto considered useless." The despatch mentions another company in another "engaged in a similar venture, but by another process," by which probably is meant the enterprise at San Luis Potosi, mentioned in the last INDIA RUBBER WORLD, and at greater length in our issue of July 1, 1900. The name "guayuli," however, is unlike any name which has been mentioned in connection with plants of the class referred to.

RUBBER HEELS IN THE ARMY.

IT was reported recently in the *Times*, published in Washington city, that the army quartermaster's department had decided "that the use of rubber heels on shoes of soldiers in the field is not practicable." In answer to a letter of inquiry the following was received from the quartermaster general's office of the war department:

TO THE EDITOR OF THE INDIA RUBBER WORLD: The quartermaster general directs me to inform you that samples of rubber heels were distributed by the quartermaster's department some time since, and that nothing definite has been ascertained in regard to their merits. Consequently this department has not given out any official statement either in favor of or against their adaptability for army purposes. Respectfully,

W. S. PATIEN,
Quartermaster U. S. Army.

Under the heading "Why the French Soldier Wears Rubber Heels" the *New York Press* says: "Every one knows that when soldiers cross a bridge they are ordered to break step, so that the regular vibration of so many feet shall not endanger the safety of the structure. Now an army surgeon of France has discovered that the brain jar due to long marches in regular step is as trying on the human frame as such marching is on the structure of a bridge. To the regular repetition of a shock to bones and brain caused by this uniform and long-continued marching are due the peculiar aches, pains and illness of the troops. On a one-day march, he says, this shock is repeated 40,000 times, and often the strongest men who can walk the same distance without trouble when not in line succumb to the strain in two or three days. Therefore this surgeon proposes as a remedy the use of rubber heels. This device has been tried in the French infantry with great success. But our army has a better plan than that. We simply break the step with the command 'route step.' At this gait the men march in columns of fours at the rate of three to three and a half miles an hour. They carry their pieces at will, keeping the muzzle elevated. They are not required to preserve silence, nor to keep the step. And that's why the American army doesn't wear rubbers."

A NEW HONDURAS ENTERPRISE.

THE American Tropical Planting Co., with an authorized capital of \$1,000,000, incorporated under the laws of Delaware, own 5000 acres of land on the north coast of Honduras, which it is intended to improve as one large farm, to be planted in India-rubber and other tropical growths. It is proposed to sell 5000 bonds, at \$200 each, in instalments, entitling the purchaser to share in the profits of the undertaking. The company announce that 2000 acres will be set in rubber trees, and their prospectus points out the basis of the belief that large profits can be made from this branch of the planting business, to say nothing of the prospective profits from other sources. The list of officers apparently is made up from good Philadelphia names: Charles D. Cramp, president; Sol. Foster, vice president; William D. Gardner, secretary; Lucier M. Wiler, reasurer; Woodford M. Davis, general manager. The offices of the company are in the Fidelity building, Philadelphia. The company's prospectus makes good reading so far as it relates to the possible yield of rubber, and in this respect the figures are not exaggerated as in the case of some other prospectuses which have appeared lately. But one point not touched upon is the expense of establishing and caring for a plantation, which is a most essential consideration.

THE COAGULATION OF LATEX.

By John Parkin, M. A., Trinity College, Cambridge.

IN the issue of THE INDIA RUBBER WORLD of October 1, 1900, Mr. Hart, superintendent of the Trinidad botanic department, in an article on "The Nature of the Coagulation of Rubber," puts my recent paper* on "Latex and its Functions" to what may appear to the general reader as a severe criticism, and by doing so invites a reply.

He first brings me to task for using the word "pure" in connection with *latex*. Most readers, I think, would not fail to understand the meaning in which the word is employed in my paper. Since in my experiments the latex of *Hevea Brasiliensis* was usually diluted with water, this epithet was introduced to denote undiluted *latex*, such as is collected from incisions in the bark of the tree. He is perfectly justified, however, in calling attention to the fact that *latex* drawn from a tree may contain matter other than exists in the laticiferous tubes themselves, because, in cutting these, all the other elements of the bark are unavoidably injured as well, and some of their contents may find their way into the laticiferous stream. In what way and to what extent the collected *latex* may have been contaminated by the surrounding tissues, are matters of conjecture only. My own opinion is, that a little of the sugar and albuminous matter (proteid) present may have so arisen. Mr. Hart's remarks seem to infer a fair quantity of extraneous matter. He speaks of "water or sap," as if diluting the *latex*. This can hardly be the case, for the water-conducting vessels of the wood need not be severed in the extraction of *latex*, as the latter resides wholly in the bark of a tree like *Hevea*. The difference in density of *latex*, according to the time of year, moisture in the soil, etc., is rather to be accounted for by variations in the amount of water contained in the laticiferous tubes themselves.

This brings me to his criticism on my estimations of the amounts of acids required to coagulate a given volume of *latex*. He thinks these amounts should vary according to the number of rubber globules suspended in the given volume, but this is contrary to my experimental results, or at least nothing of the kind was suggested by them. He finds fault with my conclusions, because they don't agree with his theory of coagulation. What is this theory? The acid is considered to act primarily on the rubber particles, "solidifying or massing them together." And how does he support it? He proceeds to state that the globules separated from albumenoids "may be themselves coagulated by simple pressure or by the mere evaporation of the adhering water," but refrains from asserting that such globules suspended in water free from albumenoids can be coagulated by acid—the natural sort of experiment required to support his view. But, in reality, has not Mr. Hart mistaken the true character of coagulation? I heartily agree with his sentence "it is possible there may be some little confusion of terms, when speaking of the coagulation of *latex*." It seems to me it is this of which he is guilty. He confuses the coalescence of the Caoutchouc particles to form rubber, such as can be brought about by drying or pressure, with what is known as the phenomenon of coagulation. The two are quite distinct. This will be reverted to in my concluding remarks.

Another point he criticises is the explanation given of the non coagulation of *latex* treated with excess of acid. He thinks it must be due to the destruction of the rubber globules by the

acid, for he finds that nitric acid destroys their nature. He does not mention what strength was employed, but I should imagine it was considerable. In my experiments the quantities of the various acids used were always too small to have any immediate effect on the rubber globules—less than 1 per cent. as a rule.

Surely the writer must be in error to state that "coagulation with alcohol is probably the method by which the purest rubber can be prepared." By this means practically all the proteid will be incorporated with the rubber, because alcohol is one of the strongest coagulants of albuminous matter; so the rubber prepared thus can hardly be looked upon as at all pure.

His proposal to substitute the words "rubber fluids" for *latex* is hardly pleasing. It would necessitate such terms as "Gutta-percha fluids," "resin fluids," etc., cumbersome ones, for which there seems no need, when we have the simple word *latex*, embracing them all.

His remarks on the various shapes of rubber globules, such as pointed ones in *Hevea*, and drumstick shaped in *Manihot*, are remarkable, and new to botanists, I should imagine. They have generally been understood to be globular in shape. However, this is not a matter of much importance to the subject of coagulation, the elucidation of which is one of the main objects of this paper.

With two paragraphs of Mr. Hart's article I am in strong agreement. The first confirms the Ceylon observations on the difference between the rubber prepared from the trunk *latex* of *Castilloa* and that obtained from the young branches and leaves—a point of much importance to cultivators, for some people are under the impression that good rubber can be got from the shoots, and that the cultivation of *Castilloa* might be conducted on the coppicing system, so as to yield a quick return on the capital. In fact, from an article* I read about two years ago this preparation of rubber from shoots would appear to be feasible, and made me hesitate to lay down dogmatically that good rubber could not be obtained from young stems and leaves of *Castilloa*, and suggested the possibility of the Ceylon trees differing in this respect from the American ones. However, this does not seem now at all probable.

The idea put forward in the second paragraph, of applying the principle of selection to rubber trees, such as is carried out for all other cultivated plants, appears to me to be one of great importance for the future of the rubber industry. The tropical botanical stations may be able to render much assistance in this direction.

In conclusion, I should like to add a few remarks on the preparation of rubber from *latex*, and in doing so to clear away some of the misunderstanding which seems to have gathered round the phenomenon of coagulation.

Latex consists of minute globules of Caoutchouc, Gutta-percha, resin—as the case may be—suspended in a watery fluid, holding various substances in solution, such as proteid, sugar, salts, acids, tannin, etc., in varying amounts, according to the kind of plant. It may be compared to milk, in which the globules of Caoutchouc, etc., take the place of those of butter fat. In both fluids proteids in solution are present; in *latex*,

* *Annals of Botany*, June, 1900.

* *Tropical Agriculturist*, December, 1898, p. 381 (reproduced from THE INDIA RUBBER WORLD).

of course, in smaller quantities than in milk. Now proteids in solution can be rendered insoluble by heat, acids, alcohol, etc., and such a change is often spoken of as coagulation. Milk can be coagulated or clotted by the addition of a little acid or rennet; the proteid comes out of solution and gathers together the fat globules. All the evidence goes to show that the coagulation or clotting of *latex* is due to a similar change; the proteid, in separating out, gathers together the globules of Caoutchouc to form a spongy mass easily torn asunder, but capable of being pressed into a piece of rubber. Such is the explanation of the coagulation of *latex*, to which Mr. Hart seems to object.

Now, to pass to the mechanical separation of rubber from *latex*, let us consider the case of *Castilloa*. If the *latex* be allowed to stand, the globules of Caoutchouc rise to the top to form a cream, analogous to that of milk. It can be skimmed off, and stirred up with water to produce, as it were, *latex* afresh. If the cream be pressed or its moisture drained off by a porous surface the rubber particles cling together to form a sheet of rubber, but this is not coagulation, though Mr. Hart seems to think it is. Again, as first shown by Mr. R. H. Biffen, the globules of Caoutchouc can be separated from the liquid part of *latex* by centrifugal force, similar to the separating of cream from milk, and thus rubber prepared without the help of coagulation.

Whether or not the individual globule of Caoutchouc has to be burst before solid rubber can be obtained is an open question. Mr. Hart holds this to be the case, and calls the fusing of them coagulation. Coalescence would be more to the point.

Three main methods can therefore be distinguished of preparing crude rubber from *latex*:

1. Simply allowing it to dry.
2. Taking advantage of its power of coagulation.
3. Separating the Caoutchouc mechanically by creaming, churning, or centrifugalization.

The rubber resulting from 1. will contain all the additional matters of the *latex*; that from 2. the proteids; while that from 3. will be composed of globules of Caoutchouc only, and be practically pure rubber.

In the endeavor to ascertain what may be the best method of preparing rubber from a certain *latex*, not only must the practicability and economy of the process be kept in view, but also the quality of the material so prepared as judged by the manufacturer. Some of the coagulating methods may be quite feasible, but if the rubber be somewhat impaired by the coagulating agents, such as acids, then their employment is hardly justified, and mechanical means are preferable. The subject is one still requiring much investigation, and will need settling ere long for each kind of Caoutchouc tree, now that their cultivation is being undertaken.

LARGE ORDER FOR ELEVATOR BELTS.

THE importance of the export trade of Pensacola, Florida, is likely to be much enhanced by reason of the grain elevator improvements recently made there by the Louisville & Nashville railroad. One feature of the Tarragona street wharf is an elevator with 500,000 bushels storage capacity, and facilities for loading 3000 bushels per hour on board ship. The elevator and conveyor were built by George M. Moulton & Co., of Chicago, who have supplied THE INDIA RUBBER WORLD with the following details:

"The conveyor system is housed in a gallery having a total length of 1854 feet from the face of the elevator, and consists of double 36 inch 4 ply belts, one over the other, for a length

of 1449 feet, at which point the upper belt terminates and the lower belt continues for the remaining distance of 405 feet. The system is in four sections: Belts in the first section extend into elevator and run out of same to the dock face, 42 feet away, where they discharge onto the belts in second section, paralleling the dock, together with the third and fourth sections a distance of 1812 feet. Owing to the railroad track cross overs and timber unloading skids occurring at three places under the conveyor gallery, it was necessary to bridge the same with spans of 75, 141, and 116 feet, respectively. The first two spans occur in the second section and the third span in the fourth section.

"The length of the belts in each of the sections from center to center of pulleys is as follows:

	Upper Belt.	Lower Belt.	Total.
First Section.....	71'	107' 3"	178' 3"
Second Section.....	779' 6"	767' 6"	1547'
Third Section.....	629'	636'	1265'
Fourth Section.....	377' 6"		377' 6"
Total (-on-centers).			3367' 9"

"The total length of 36 inch 4 ply rubber belt used in this system, including splices and allowance for trippers, was 6854 lineal feet. In addition to the belts used for conveyor system there was installed 1870 feet of 22 inch 6 ply rubber belt for elevating purposes. All of the foregoing belt was furnished us by the New York Belting and Packing Co., Limited, of New York, under the following specifications:

"All of the belts are to be the best quality of goods manufactured for elevating purposes, to be made of the best cotton duck, the 22 inch belts to be of 3/2 ounce and the 36 inch belts of 30 ounce per square yard. Belts to be pliable, thoroughly stretched and pressed, leaving a smooth, hard finished outside surface."

The total length of conveyor belts will be seen, from the above, to be 7724 feet, or 1.46 miles. The surface area of the belts is 2643 square yards, or considerably more than half an acre.

THE RUSSIA-SUMATRA ENTERPRISE.

IN the November INDIA RUBBER WORLD appeared a letter from the president of the Russian-American India Rubber Co., of St. Petersburg, confirming a report that he had become interested in a practical way in the planting of rubber in Sumatra. The *Freiburg Zeitung*, a German newspaper, contains the following:

"The firm van den Houtervillems & Poppen, of Berlin and Batavia, have caused the first step to be taken to lay out a large plantation of *Ficus elastica* in Sumatra. The director general of the world's largest rubber factory, consuming over 3,000,000 kilograms of crude rubber per year, has become interested, and has gone to the East Indies to inspect existing conditions. He is fully convinced that the cultivation of rubber can be made profitable there—land, laws, and labor conditions being favorable. A kilogram of good *Ficus* rubber costs to-day 8 to 9 marks, which, by cultivation perhaps can be produced at 3 to 3.50 marks. This factory intends to plant some 100,000 trees, and has for that purpose acquired about 10,000 bouws of land (about 17,534 acres) on which the planting has been commenced. The first step in rubber planting by the rubber industry itself, having been made, and it is to be hoped that other rubber factories, including those in Germany, will arrive at the conclusion to plant their own rubber, independently of the markets of the world. By doing this they may be enabled to obtain a uniform crude material at low cost."

THE ACTION OF WATER UPON INDIA-RUBBER.

By Hubert L. Terry, F. I. C.*

WATER does not percolate through rubber with any great rapidity, but that it does pass through it to an appreciable extent, and at ordinary atmospheric pressure, was demonstrated a great many years ago by Thomas Hancock, quite the most astute and laborious worker the field of India-rubber has known. To quote Hancock's own words: "I suspected rubber was not entirely impervious to water, and I had the curiosity to make a bag of canvas lined with sheet rubber, which I filled with water and sealed hermetically." The result of this test is shown in the following series of figures:

			lb.	oz.	dr.
The weight on	October 21, 1826	was	1	1	4
"	October 25, 1827		1	1	2
"	October 2, 1835		1	0	0
"	November 1844		14	12	
"	October 1849		13	4	
"	February 1851		7	8	
"	May 1854		3	14	

Two years later the bag, when cut open, was found to be quite dry, showing that the whole of the water, rather more than 12 ounces, had escaped in the thirty years which had elapsed since the bag was filled. It is not every experimenter of the present day who has the patience to wait thirty years for his results, and although many experiments dealing with the absorption of water by rubber have been conducted at various times I do not know of any published results which cover so much time and which are so conclusive as those published by Hancock. A point, however, which must not be overlooked is the fact that the above figures relate to pure or unvulcanized rubber, a body which can be shown by means of the microscope to contain innumerable minute pores. With vulcanized rubber the case is quite different, and this product at ordinary pressures may be considered as almost impervious to water unless it is extremely attenuated, although I am unable, in support of this statement, to give any figures corresponding in value to those of Hancock as far as extended observation is concerned.

Reference has been made to the fact that Hancock's experiment with pure rubber was conducted at the ordinary pressure of the air, and that the impermeability of vulcanized rubber relates also to ordinary pressures. That increased pressures tend to increase the amount of water which rubber will absorb may be considered as proved. With regard to the action of water upon pure rubber under pressure, it may be mentioned that quite recently experiments in relation to this subject have been carried out at the Charlottenburg testing laboratory at Berlin, and as one result it was shown that the same amount of water absorbed in two hours at ordinary pressures was taken up in 5 min. when the pressure was raised to eight atmospheres. With regard to the exact amount of water taken up by rubber at ordinary pressures the figures given by different observers show considerable variation, but this may probably be accounted for by the fact of the thickness of the rubber sheet not being identical in each case. The Charlottenburg authorities give 8 per cent. to 35 per cent., though why the range should be so extensive is not easily apparent. Dr. Obach has given 24 per cent. as the absorption of water in four months, and although I can endorse this figure I have obtained such vary-

ing results with rubber of different composition, and have found that so much depends upon the details of the experiments, that I am disinclined to give any definite figure myself until I am in a position to treat of the matter in detail. An important point in connection with such tests is to see that the surface of the rubber is clean, that is, that it is free from the various chemicals which the manufacturers apply to the surface to destroy the tendency of the rubber to adhere when it is rolled up. The exact nature of the treatment to which the rubber is subjected by the different manufacturers to effect this end comes under the category of trade secrets, and need not be entered into here, but it is right that the fact should be mentioned, and it is also advisable to say that the processes adopted by the different manufacturers are not identical. From what has been said it will be seen that the sheet rubber employed in one case may have had its tendency to absorb water affected to a greater degree than in other cases, and this I venture to suggest may account to some extent for the discrepancies noticeable in the figures given by various observers in regard to the exact amount of water which such rubber is capable of absorbing at ordinary pressures.

If any further proof is wanted about this absorption we have the evidence which is derived from the washing and drying of the crude rubber in the works. The rubber, which is washed on fluted rollers, is hung up in the form of sheets in stoves maintained at a temperature of about 100°F. The drying process may take four or five days for completion, though over 90 per cent. of the water which is present is removed in a few hours, especially if a current of air circulates in the stove. It is the last few per cent. of water which is so difficult of removal, and it is not at all improbable that this is fixed in some sort of way, chemical or physical, in the pores of the rubber. The thinner the sheet of rubber is, the quicker does the removal of this last few per cent. of water take place, though where the amount of material to be dried is large, the cubic drying space available in a works is not always sufficient to allow of the production of very thin sheets.

To turn now more particularly to the action of water upon rubber it may be asked whether this is entirely physical or if it induces any chemical change in the material. As far as we know with any certainty the change can only be described as a physical one, the effects being increase of bulk and diminution of adhesiveness and tenacity. In driving off the water by heat the rubber apparently suffers some injury, rendering it more prone to decay, but this, it is at once seen, cannot fairly be described as the effect of the water alone. When pure rubber is allowed to stand in water for any length of time it certainly undergoes some kind of decomposition, though I am not aware that the precise nature of the change has been shown. Of course the uses of pure rubber are very limited compared with those to which the vulcanized product is put, and in the case of its principal application for cable purposes—I refer to the layer of sheet usually lapped as a first coating round the wire—it cannot be said that the question of the absorption of water is likely to come into prominence. There may be cases, however, where unvulcanized rubber forms the bulk of the insulation, and I am reminded of some cables for mining explosion purposes which I saw at the exhibit of Messrs. Geoffroy & Delore at the Paris exhibition, and which were described as

* In *The Electrician* (London), October 12, 1900.

being insulated with "natural rubber." This term is usually taken to mean raw rubber which has not undergone any of the processes of mastication, solution, or vulcanization, but in this case presumably means the masticated product referred to in this country as "pure India-rubber."

Although, as has already been stated, the absorption of water by vulcanized rubber is infinitesimal compared with pure rubber, yet figures given by Payen many years ago show that this absorption does take place to some extent, and the fact cannot be ignored by those who propose to put vulcanized rubber cables in water. In this connection it may be said that Mr. Kilgour, in his book on "Electrical Distribution," states that Messrs. Johnson & Phillips believe that the only other system of cable which could compare on the score of efficiency and permanency with the Brooks' oil system is that in which the cables highly insulated with vulcanized rubber or Gutta-percha are drawn into iron pipes kept full of water. This, no doubt, is all right as regards Gutta-percha, which remains unaltered under water, but there seems to me to be room for doubt as to the permanency of the rubber cable when laid in this way; at any rate, it seems quite legitimate to prophesy trouble within the limits of infinity, which the term "permanent" rather suggests.

With regard to the important issue of the action of water on deep sea vulcanized rubber cables, there seems to be a considerable difference of opinion, and it may be that the idea that rubber is quite unsuitable for this purpose originated in the fact that some of the earlier rubber cables proved unsatisfactory. Perhaps opponents of rubber for this purpose have not paid sufficient attention to the results which have been obtained by improvements in the rubber insulation. Messrs. Hooper recently wrote to the *India Rubber Journal*, in reply to an article reflecting on the use of rubber for deep sea work, stating that a vulcanized rubber cable laid by them twenty-five years ago in 2000 fathoms of water is now in perfect condition. The passage of arms which has taken place between Mr. Oscar Schafer in *The Electrician* and Mr. Ira Henry in *THE INDIA RUBBER WORLD* has relation more to the probable longevity of the seamless insulation than to any defect which is likely to arise from porosity. But from the fact that the United States government has recently given an order to the Safety Insulated Wire and Cable Co. of New York, to which firm I understand Mr. Henry belongs, for 400 miles of rubber insulated cable for deep sea purposes, it would seem that the question of porosity is not one that need be seriously considered. In face, then, of what has just been said it would seem that the opponents of rubber insulation from the porosity point of view had perhaps better reconsider their position, which recent experience goes a long way to prove is somewhat untenable. Of course, in referring to the action of water upon rubber it is always necessary to be explicit as to the nature of the rubber, whether highly compounded or not, because the composition of the rubber may have a profound influence in determining its capacity for absorption.

COMMENT IN THE "INDIA RUBBER JOURNAL."

In connection with a paper, in a recent number of *The Electrician*, by Mr. H. L. Terry, dealing with the action of water on rubber, it has been pointed out to me by a member of a prominent cable manufacturing company that there is no evidence of the absorption of water by vulcanized rubber cables to the extent of interfering with the electrical insulating power. The paper in question dealt only with certain facts and pointed to no conclusions, and with regard to the cable question it seems to be a matter of how far the water penetrates. Evidently if rubber cables can be laid in water for a long time without

suffering any hurt, the three or four per cent. of water which is absorbed does not travel to the wire but remains in the outer layers of rubber, where it does not lead to any trouble.

MANUFACTURE OF ARTIFICIAL LEATHER.

HERE is the mode of manufacturing an artificial leather, as patented by O. Theile and J. Stocker, Stargard, Pomerania, Germany: (1) Five parts of bone glue are dissolved in linseed oil heated to 100°C., or in tannin solution, or glycerin and paraffin. (2) Five parts of Caoutchouc and 10 parts of colophony or other resin are dissolved in 100 parts of sulphide of carbon and 6 parts of spirits. The solution of these materials occupies from 12 to 24 hours. The two solutions are mixed, with continuous stirring, in a glazed close vessel. (3) Fifty parts of ivory nuts, cocoa, or Pará nuts, are ground, boiled in glue solution, and then dried. (4) Fifty parts of cotton fiber, or wool or other fiber, are finely divided by suitable machinery. The materials referred to under (3) and (4) are combined with those referred to under (1) and (2) by working them together for a sufficient length of time in a rag engine, and during this process 5 parts of carbonate of lime and such coloring matters as may be required are incorporated with the mass. In order to produce a good white color, 5 parts of camphor must be dissolved in process (1) or (2), it being then possible to effect a thorough bleaching. A silky luster is imparted to the material by adding to the product of operations (1) and (4) a little acetic acid and boiling for five minutes.

When the working of the mixture in the rag engine has been continued sufficiently long, the product is spread out and dried in the air for one to two hours. The dried mass is rolled to the desired thickness and then passed through a mixture of concentrated nitric and sulphuric acids in order to remove the fibrous particles visible on the surface and to impart to the whole a homogeneous horn-like appearance. Washing and drying follow and the mass is introduced into a solution of camphor in ether; it is then again rolled, the rollers being heated to about 50°C. The proportions given in the foregoing can be varied within certain limits.—*Der Gerber*.

ELECTRIC CABLES IN MINES.

IN an article in the *British Colliery Guardian*, Mr. Valker discusses the difficulties in insulating cables in mines and protecting them against mechanical injuries. He recommends vulcanized India-rubber insulation of one-tenth to one-eighth inch thickness; but as this insulation is finally affected by long exposure to moisture, he recommends to cover the cable, thus insulated, by a layer of hemp impregnated with a substance which is impermeable to moisture and does not affect the India-rubber, and to shelter this again by bands impregnated in the same way. A cable treated in such a way should be enclosed in a wood case or lead pipe. A concentric cable with a good paper insulation with sufficient thickness of paper covering the outer conductor, the whole being protected by a light armor sheeting, would form a cable of nearly ideal properties for mines.

A NEWLY discovered rubber tree from the Congo country is illustrated in *La Semaine Horticole* (September 29). It has been designated the *Ficus Luciani*, and is described both as a highly ornamental plant and as yielding rubber of a superior character. It forms part of a collection made in the Congo country under the direction of Lucien Linden, of Brussels, for display at the Paris Exposition.

USE OF RUBBER IN THE PAPER MANUFACTURE.

THE importance of the paper making industry in affording a demand for rubber goods long has been understood, but it cannot fail to be of interest to note the indications that the limit to this demand is yet far in the future. Not only is the consumption of paper in the United States alone constantly increasing, but it undoubtedly is destined to increase in other countries now civilized, to say nothing of other parts of the world which, while now using little paper, ultimately may become large consumers. All of this prospective growth is of direct or indirect interest to the American rubber industry, for the reason that the United States seem destined to occupy the first place in the production of paper so long as wood pulp remains the material of chief importance in its manufacture. The United States have the wood needed for this purpose in a larger measure than any other country, together with other facilities or advantages bearing upon the paper industry which cannot be equalled elsewhere. Nor is it likely that the supplies of wood will be exhausted. The science of forestry is being availed of in this country in a practical way, as is indicated by the fact that the owners of the largest news paper mill in the world, owning more than 300,000 acres of forest land, are following a carefully matured plan of felling lumber under which it is believed that the same land can be cut over repeatedly with good profit. Large mills of this kind, therefore, once profitably established, may be expected to remain permanently located, having always a supply of wood assured, which is of as much importance as an assurance of a permanent demand for their product. There is also a permanent demand for rubber goods in the same connection, for the equipment of to-day, no matter how high its quality, must be replaced from time to time.

The state of Maine, by the way, has rapidly come to the front of late as a paper manufacturing state, owing to its possession of such great forests of spruce, which is now recognized as the best variety of wood for making the pulp used in the paper industry. Besides, the water power afforded by the streams of Maine renders it possible to operate large mills on a more economical basis than is true in most sections where the paper industry is carried on. Several pages of *The Paper Mill* (New York) for November 24, 1900, were filled by a correspondent sent to write up the largest paper mill in the world—the Millinocket mill, in the town of that name, lately built by the Great Northern Paper Co., on the line of the Bangor and Aroostook railroad, 75 miles northeast of Bangor. This mill has just been set in operation, and its capacity is so great—involving the investment of \$4,000,000 in capital—as to give Maine first rank as a paper producing state. The total capital now invested in Maine is about \$30,000,000, and 37 plants are operated in addition to the one here referred to. The statements in *The Paper Mill* have been compared in THE INDIA RUBBER WORLD office, so far as comparison is possible, with the latest report by the commissioner of industrial and labor statistics of Maine, with the result of verifying the correspondent's work to an important degree. We are all the more prepared, therefore, to introduce here some extracts from the article referred to, as having an interest for the rubber trade:

"The rubber goods equipment of any pulp or paper mill, however small, is usually quite an item, but in a model plant of the magnitude of the one at Millinocket, Me., operated by the Great Northern Paper Co., the amount of rubber belting, hose,

deckle straps, rubber covered rollers, etc., required is simply enormous. All of these goods used in this plant were made and furnished by the Boston Belting Co. (Boston, Mass.) The rubber belting supplied was their 'Imperial' stitched, which is well and favorably known to pulp and paper makers throughout the world. More than 21,000 feet (over four miles) of 'Imperial' stitched belting were used at the Millinocket mill. Over 7000 feet of 6 inch 4 ply 'Imperial' belting was required, and other sizes ranged from 3-inch 4-ply up to 30-inch 8-ply; the majority, however, being wide heavy belts. Over 11,000 feet of 'Imperial' stitched belting has also been recently furnished for the Great Northern Paper Co.'s plant at Madison, Me.

"The Boston Belting Co. also supplied thousands of feet of water and steam hose for use at the Millinocket plant, as well as nine pairs of deckle straps, each being about 50 feet long. Another important feature is the rubber-covered press rollers which were furnished by the Boston Belting Co. in connection with the paper machines built for this plant by Rice, Barton & Fales Machine and Iron Co., Worcester, Mass. There were seventeen rollers, each 22½ inches iron diameter, 24 inches finished rubber diameter, 149 inches long and weighing about 9000 pounds; total weight of the seventeen approximating upwards of 75 tons. [These dimensions call for 1325 square feet of rubber covered surface.] This order for rubber goods awarded to the Boston Belting Co. by the Great Northern Paper Co., for their Millinocket plant, is said to be the largest contract for rubber goods ever placed for the equipment of a paper mill, and it is, undoubtedly, one of the largest transactions in rubber goods ever made without exception. It is safe to say that the value of the rubber goods alone, used at Millinocket, is sufficient to build and equip quite a sizable paper mill from start to finish." It may be added that each roller is provided with a hard rubber "doctor blade," the office of which is to keep the surface of the roller freed from substances which might create defects in the paper. These blades alone cost \$75 each, and were also supplied through the Boston Belting Co.

Another important application of rubber, and one which is practically new in connection with the paper industry is mentioned in *The Paper Mill*—the use of belt conveyors for handling the wood in the various processes of converting it into paper. The spruce logs, as they are brought into the Millinocket mill, are first sawed into convenient lengths, after which the bark is removed by one set of machines and the wood reduced to chips by other machines. The chips are conveyed to the top of the sulphite vats by one set of belt conveyors, and the refuse from the "barkers" is carried by another set into the boiler rooms, to be consumed as fuel. *The Paper Mill* says:

"The Robins belt conveyors were installed for handling the chips and bark, as the system has proved eminently satisfactory for this service in the Madison plant, where it has been in use for several years. One conveyor runs under the barkers and receives the bark and refuse, rising, after it leaves the end of the row of barkers, at a grade of 6 inches to the foot, to the boiler house, where the load is delivered ready for conversion into heat. So smoothly does the conveyor run that one can scarcely hear it fifteen feet away, and its noiselessness is much appreciated. The material runs up the steep incline as easily as on the level, and none slips back while being elevated.

"Another conveyor serves the chippers and finally conveys

and elevates the chips to the huge storage bins [54 feet high] at the top of the digester house. Here even distribution of the chips is accomplished by a tripper or discharging device, which is the most wonderful part of the belt system. This tripping machine, mounted on a car which runs on tracks along the entire length of the bins, takes its motion from the belt conveyor itself, and moves slowly back and forth, reversing automatically at either end, delivering its never ceasing stream of chips into the bins more evenly and smoothly than could be done by many trimmers. Day in and day out it travels to and fro, requiring absolutely no attention. It undoubtedly saves more labor than any other machine in the mill. In fact, the whole system of belt conveyors requires no attention. These conveyors were made by the Robins Conveying Belt Co. (New York), being of the type for which a "grand prix" was awarded at the Paris Exposition of 1900.

The extent of these conveyors may be inferred from the fact that the Millinocket mill has a capacity for producing 240,000 pounds of finished news paper per day, necessitating the handling of a much greater weight of material in its production. The pumps and engines in this great plant require a large amount of rubber packing, and the extensive equipment of electric wires is rubber insulated wherever they are exposed to dampness. In fact, rubber is called into use throughout the plant.

LITERATURE OF INDIA-RUBBER.

WE have received a set of the numbers of "Commercial Circulars," issued by the reporter on economic products to the government of India—Dr. George Watt, at Calcutta—which relate to "India-Rubber, Caoutchouc, or Gum Elastic," as follows:

1896—Nos. 3, 12. 1897—Nos. 1, 3, 8. 1898—Nos. 5, 10. 1899—No. 2. 1900—Nos. 8, 11, 12.

Reproduced in these "Circulars" is everything which has appeared in any Indian official publication in relation to rubber, during the years mentioned.

IN CURRENT PERIODICALS.

A COMPARISON OF English and American Practice in Cable Manufacture. By J. Wright. = *The Electrical Review*, London. XLV-1198 (November 6, 1900.) pp. 733-733.

The Action of Water upon India-Rubber. By Hubert L. Terry, F.I.C. [With reference particularly to the use of rubber in submarine work.] = *The Electrician*, London. XLV-25 (October 12, 1900.) pp. 916-917.

Le Caoutchouc en Guinée. [Summary of experiments made and results reached in planting rubber in French Guinea.] = *La Gazette Coloniale*, Brussels. II-41, 42. (October 14, 21, 1900.)

Der Wurzelkautschuk im Kuene-Gebiet (Root rubber in the Kuene district). By H. Baum. [With five illustrations from photographs of natives engaged in the various processes of preparing the rubber.] = *Der Tropenpflanzer*, Berlin. IV-10 (October, 1900.) pp. 475-480.

La Gutta-percha. [Reprint from the *Bulletin de la Société d'études Coloniales* (Brussels) of a paper based on the work of Dr. Obach and Dr. Semler.] = *Revue des Cultures Coloniales*, Paris. VII-65 (November 20, 1900.) pp. 678-688.

Le Balata. [Reprint from *La Gazette Coloniale* (Brussels).] = *Revue des Cultures Coloniales*, Paris. VII-65 (November 20, 1900.) pp. 692-694.

Extraction du Caoutchouc de l'Écorce de la liane "Voahaina" [or "Voahena."] = *Revue des Cultures Coloniales*, Paris. VII-65 (November 20, 1900.) pp. 694-696.

OTHER PUBLICATIONS RECEIVED.

THE PROGRESS OF INVENTION IN THE NINETEENTH CENTURY. By Edward W. Byrns, A. M. New York: Munn & Co., Scientific American office, 1900. [Cloth. 8vo. pp. viii+476. Price. \$3. Illustrated.]

THIS work, in the words of the author's preface, does not

claim "the authority of a text book, the fullness of a history, nor the exactness of a technical treatise," but is intended rather as "a cursory view of the century in the field of invention, intended to present the broader bird's eye view of progress achieved." Steam and electricity in their manifold applications are treated, together with printing, textile and metal working, and many other inventions of importance, including a chapter on "Vulcanized Rubber." From an examination of the latter, we should judge that the information contained throughout the work is accurate, while the style will commend it for general reading.

CONVERSE.—The recent celebration of the eightieth birthday of the Hon. Elisha Slade Converse, of Malden and Boston, founder and president of the Boston Rubber Shoe Co., was the means of bringing to the notice of some who had not seen it before, a substantial volume, printed for private circulation, entitled "Family Record of Deacons James W. Converse and Elisha S. Converse." It includes some of the descendants of Roger de Coigneriés (as the name was once spelled), who settled in Durham, England, in 1066; of Deacon Edward Converse, who settled at Charlestown, Mass., in 1630; and of the related families of Wheaton, Edmonds, and Coolidge. This contribution to Massachusetts genealogy, of wide interest outside the families mentioned on account of the prominence in the history of the state of many of the individuals mentioned, was compiled and edited by William G. Hill, of Malden, whose mother, Sarah Converse, was an elder sister of the Hon. E. S. Converse.

THE Canadian Shoe and Leather Directory, published by the *Canadian Shoe and Leather Journal* (Toronto), is a complete handbook of the shoe and leather and kindred industries of the Dominion, and will serve as a convenient guide to the rubber shoe trade in that country. [Cloth. 8vo. pp. xl+190. Price, \$1.]

EIGHTH Annual Report of the Bureau of Industrial Statistics [of Maryland] for 1899. Baltimore: 1900. 8vo. 167 pp.

Statistics of Manufactures, 1898, 1899. [Part II of the report of the Massachusetts Bureau of Statistics of Labor for 1899.] Boston: 1900. 8vo. 165 pp.

Annual Report of the Wire Department for the Year 1899. Boston: Municipal Printing Office. 1900. 8vo. ii+48 pp.; plates and map.

First Annual Report of the American Bicycle Co., August 1, 1900. [New York.] Small 4to. 8 pp.

The Metric System. By Rufus P. Williams. London: Issued by The Decimal Association. 1900. 12mo. 8 pp.

The History and Growth of the United States Census. Prepared for the Senate Committee on the Census, by Carroll D. Wright, Commissioner of Labor, assisted by William C. Hunt, Chief Statistician. Twelfth Census. Washington: Government Printing Office. 1900. 8vo. 967 pp.

Second Annual Report of the New York State College of Forestry, for the year 1899. Albany: State Printer. 1900. 8vo. 46 pp. and map.

Industrial Combinations. Address by Charles R. Flint to the Illinois Manufacturers' Association, Chicago, October 9, 1900. 12mo. 24 pp.

A COMPANY has been formed under the style Barnet Glass & Sons, Limited, with a capital of £50,000, to acquire the business of Barnet Glass & Sons, manufacturers of India-rubber goods and waterproof clothing at Melbourne, Australia.

AN advertisement by a leading supply house in the city of Mexico, in *The Mexican Herald*, announces that they are sole agents for the republic of Mexico for the rubber belting, packing, and hose made by one of the leading American manufacturers.

THE INDIA-RUBBER INDUSTRY IN GREAT BRITAIN.

By Our Regular Correspondent.

THE firm of W. T. Glover & Co. have now got their new premises in Trafford Park, Manchester, in full working order and their business of cable manufacture will in the future be entirely carried on here, though some little time will elapse before the old works in Springfield lane, Salford, are entirely closed. The new works cover

GLOVER'S
NEW
CABLE
WORKS.

at present an area of 16,000 square yards, and there is ample space available for any future extensions which may be necessary. Nearly 600 hands are employed, the work being limited to the actual cable manufacture, the necessary wire and the pure and compound rubber being obtained from outside firms, the firm not having considered it advisable to adopt the procedure of certain of their trade competitors in the way of putting down rubber manufacturing plant. The work at present on hand includes what is probably the largest single order yet given out for cable of its class. This contract is with the Salford corporation for the supply and laying of electric light cables, tramway feeders and street lighting accessories, to the value of £160,000. The cables are to be insulated with diatrine, a patented compound which is now the property of the Messrs. Glover, but which I understand was the discovery of Mr. George E. Heyl-Dia, now of the St. Helens Cable Co. of Warrington, but who was once in the service of the Messrs. Glover. Though the firm owes its inception, in 1868, to the late Mr. Walter Glover, there is no one of this name now on the directorate, of which Messrs. Samuelson, Fawcett, and Claremont are now the moving spirits. The "diatrine," I am informed, is a chemical compound containing certain oils, and the insulating material consists of paper made of pure manila fiber which has been treated with the diatrine compound. These cables are recommended for high tension work, as they stand very high voltages without breaking down, and at the same time have a low specific inductive capacity. As in the case of all fibrous insulations, they are supplied with a protective covering, either of plain lead or with lead armored with steel strip, with a final coating, or yarn or tape. In addition to the diatrine insulation, the firm do a large business in vulcanized rubber cables of guaranteed minimum resistance, both single and concentric. Pure rubber insulation, described as for ship use is also made in the concentric form, but space precludes any further mention of the various branches of the cable industry to which the business of the firm has extended, and those who are specially interested can be recommended to apply for the very complete catalogue and price list which has recently been issued.

THE firm best known in this connection is that of Tuck & Co., Limited, whose works are at Lambeth, London. Not that there seems to be anything much which goes to distinguish the make of this firm from that of others, but they have got the name, which goes a long way in business.

ENGINE PACKING.
The rubber firms generally complain that this is an unprofitable line, and certainly as they are requested to supply it at as low as 6d. per pound there is not much margin for profit if any rubber at all is to be used. The usual procedure seems to be to buy old sailcloth at shipping ports—a material which costs about £30 per ton—and then to spread on it a very common compound, the vulcanization being effected by the heat to which it is subjected when in use. No doubt a better product could be obtained by frictioning in the calender, but the cloth

is of too poor a quality and spreading has perforce to be resorted to. The packing is of course chiefly on sale in industrial centers, and is a prominent feature of the middleman's business. In the great engineering district of which Newcastle-on-Tyne is the center, and in which there are no rubber works, there are two or three mechanical rubber dealers, notably George Angus & Co., who do a large trade, and it would seem that their profits are not limited to the margin which they leave to the rubber manufacturers who supply them. Tuck's packing is stamped with the name of the firm on every foot or so, a proceeding which seems to be conducive to repeat orders. To a large extent asbestos alone or asbestos and rubber in combination is replacing the cotton and rubber packing, in certain classes of machinery especially.

THE commotion into which the inhabitants of certain north of England towns, notably Manchester and Liverpool, have been thrown by the epidemic of illness caused by arsenic in beer has led to all sorts of theories being advanced to account for the presence of the poison or by way of suggesting other possible sources of mischief. Now that the arsenic has been traced to the use of certain glucose in which impure sulphuric acid entered, there is no need to indulge in any more theories implicating other materials or utensils. Although the metallic tubing and connections were condemned as dangerous by certain writers, the rubber tubing escaped attack. And rightly so, although as diligent search has been made all round for arsenic it is quite possible that traces might be found in tubing which contained a high percentage of oxide of zinc. The only authoritative figure I can put my hands on at the present time is .088 per cent., and if this is not exceeded it does not seem necessary for the tubing to engage counsel in its defense.

BEER TUBING.
THERE is a good deal of difference in the specification forms which the different British companies issue, much more detail being entered upon in some cases than in others. Take for instance the case of quantity. While the Great Northern Railway of England gives no figures, the Great Northern of Ireland, relatively a much less important line, gives approximately the amount of each class of goods which it requires and this is a decided advantage to the firms tendering. Again, in the matter of quality the English line simply specifies that the best quality must be quoted for, which is rather vague in the case of compound rubber; on the other hand the Irish line gives details of tests to which buffers must conform thus weight per cubic foot 102 pounds=*specific gravity*: 1.632. It must return to its original form after a pressure of 5 cwt. per square inch of area for 24 hours. The amount of compression under this weight must be not less than one-half the thickness. To take another Irish railway, the Great Southern and Western, no quantities are given on the specification form and the following is the standard to which the buffers must conform: Any spring or ring after being compressed to half its thickness for 120 hours shall return to its original form within one hour and show no sign of failure. It must also stand a moist heat test of 320° F. for three hours. The *specific gravity* of the rubber must be as near as possible 1.632 = 102 pounds per cubic foot. These two tests will be seen to be very similar though expressed in different language, though the first named line says nothing of the heat test which by the

RAILWAY
RUBBER
CONTRACTS.

way, is that of the British admiralty. The examples just given will be sufficient to show that there is anything but uniformity in the specifications of the various British railways, and the fact could be more emphasized if the limits of space permitted of the subject being treated in greater detail.

No falling off in this department is to be recorded; indeed makers seem fully employed. Despite assertions to the contrary, the printed surface for ladies' garments has lost none of its popularity, and the three firms who do this sort of work on the large scale, namely, Messrs. Moseley, Frankenburg, and Gotliffe, report an increase of their business. The last named firm, whose works are at Hyde, near Manchester, undertake besides their own work the printing and curing of proofed cloth for other firms who do not care to put up an expensive printing machine of their own. The printing material which is almost entirely used is aluminium powder, and considerable success has been attained in obtaining this of different tints. The aluminium itself comes from Germany and the patent for its use is still in the hands of Mr. Frankenburg, the compromise which was effected in the action of Frankenburg *v.* Moseley, as to its validity not having transpired as to its details. The proofing trade does not seem to think there is any likelihood of continental competition in the home markets, and it is to be hoped that such confidence is not misplaced, although in the light of what has transpired in other branches of the trade it is somewhat risky to scout the idea of its possibility. Where partially finished work is given out by one firm to be completed by another the question of responsibility in case the goods eventually turn out defective is apt to become one of some moment; in such cases where cloth spread by one firm is vulcanized by another the latter informs the former exactly how the curing is carried out and disclaims any further responsibility, which seems the best course to pursue.

MR. JOHN F. BIRLEY has joined the firm of Charles Macintosh & Co., Limited, presumably with a view to partnership with his cousins, though at present he will only fill a subordinate position in the works. Mr. W. H. Cresswell, late principal partner in the Hyde Imperial Rubber Co., of Woodley, has severed his connection with this firm and is starting a new company at Lee Cross, about a mile distant. The new firm will be known as the Cheshire Rubber Co., and progress is being made in fitting the premises which were originally a hat factory, with the necessary rubber machinery. Mr. W. W. Stuart, also of late with the Hyde Imperial, will act as works manager with the new concern. The new works of Messrs. Laughton & Co., at Bradford, Manchester, were opened on November 12, invitations being sent to the firm's customers to a luncheon at a local hotel. The firm carry on the manufacture of rubber chemicals and substitutes and the new premises were necessitated as the outcome of a disastrous fire which occurred some months ago. Mr. Rodgers, late works manager to the Gorton Rubber Co., of Manchester, has given up the position and the rubber trade as well, having gone into a metallurgical business at Birmingham. Another gentleman of much the same name—Mr. Rogers, assistant inspector under the Factory Acts—has left Manchester to act in a similar capacity at Birmingham, where he will not find so much work to do in connection with the bisulphide of carbon regulations. It is hardly surprising that Mr. Rodgers was not always received as a welcome guest in the rubber factories of his late district, as he set himself with great zeal—unnecessary zeal some thought it—to see that the letter of the new regulation was obeyed. His fervent wish so often expressed to the writer that a substitute could be discovered for the bisulphide does not seem to

be any nearer realization than it was years ago, that is as far as the dipping process is concerned, though it is to be reported that some progress has been made in replacing the bisulphide in the cold cure of textures.

As far as the rubber firms are concerned the pneumatic tire business is not at the present time in a very satisfactory condition, and much caution is displayed in accepting large orders from cycle companies. Many of these companies have pretty well run through the inflated capitals which the public willingly subscribed at the height of the boom and find themselves now in a somewhat unsatisfactory position. Moreover the manufacture of second grade tires in accordance with the prevailing demand has led to a certain amount of dispute though no case of any importance has come before a judicial tribunal. At the present time the Pneumatic Tyre Co., of Aston Cross, Birmingham, which is in close business relations with the Dunlop Pneumatic Tyre Co. has the great bulk of the pneumatic business and are finding their capacious premises none too large for the work on hand.

OTHER NOTES FROM ENGLAND.

THE directors' report of the India Rubber, Gutta Percha and Telegraph Works Co. (Silvertown), for the year ending September 30, presented at the meeting, held December 13, showed a net profit for twelve months, after provision for doubtful debts, of £67,328 18s. The directors recommended the payment of a dividend which, together with the *interim* dividend declared in the summer, would bring the total for the year up to 10 per cent. The accounts show £31,511 8s. 10d. brought forward from the preceding year, and the amount to be carried forward is £48,750 6s. 10d.

A new company was registered on November 22—Isidore Frankenburg & Co., Limited—with a capital of £25,000, to take over as a going concern and carry on the business of a manufacturer of and dealer in waterproof, rubber, and leather goods, and electric cables carried on hitherto by Isidore Frankenburg, at the Greengate Rubber Works, Greengate, Salford, Manchester.

It is announced by the British colonial office that the Pacific Cable committee have accepted on behalf of her majesty's government, and of the governments of Canada, New South Wales, Victoria, Queensland and New Zealand, the tender of the Telegraph Construction and Maintenance Co. for the manufacture and laying of the projected Pacific cable. The amount of the tender is £1,795,000, and the work is to be completed by the end of 1902. The cable will run from Vancouver to Queensland and New Zealand, via Fanning Island, Fiji, and Norfolk Island. The total length of cable will be considerably over 7000 miles, and the stretch from Vancouver to Fanning Island—approximately 3500 miles—will be the longest cable in the world.

The British cycling press has been complaining that the tires sold nowadays are inferior to what were offered to the trade in the past. According to our London contemporary, David Moseley & Sons (Manchester) replied to one such publication by sending to the author a specimen of air tubes bearing their trade mark, with a statement that of the millions of covers and tubes thus marked, not one in ten thousand had been the subject of complaint, to their knowledge. The firm admitted, however, that in view of the demand for cheaper goods, they had supplied grades which do not bear their trade mark. Evidently buyers of cycle tires, as well as other kinds of rubber goods, have themselves to blame if they insist on buying at a lower price than a first class article can be sold for.

NEW GOODS AND SPECIALTIES IN RUBBER.

WORKMEN'S MACKINTOSH COATS.

WHAT has been known as the duck coat has been long sold to workmen and farmers. The original coat was without lining and was used merely as a working coat. It was, however, thin and cold in winter, and it was not long before it was made up with lining of blanket shoddy, the shoddy running about 8 ounces to the yard. A



little later some thinker brought out a coat with a sheet of rubber between the lining and the duck. Still later, a Chicago house patented a double texture cloth made of duck and shoddy. This was found to be a valuable double texture fabric, and immediately others began to make a similar cloth, using domets and other linings, and finally switching off from the duck and coming out with cotton coverts for a surface with shoddy for the lining. This last development seems to be about the high

water mark for the workmen's coat. Indeed the covert will undoubtedly drive the duck jacket out of the market in many places. The duck jackets were formerly manufactured by the overall makers, the fabrics having been proofed and sold to them. The mackintosh men now, however, are taking a hand in the game, and without doubt will soon have the whole business. A conservative estimate of the amount of duck used in duck coats last year is about 15,000 bales. This would make about 325,000 garments, and now that the more stylish cotton covert has been brought out, a coat that a farmer can wear to the village or to church, and that will also be very cheap, there certainly should be 500,000 duck and covert garments sold during the coming year. These duck coats, by the way, are usually made up in brown and black, while the coverts are made in drabs and tans. They are made single and double breasted, about 32 inches long and occasionally are made up in the form of ulsters. The regulation collar is of corduroy, usually $5\frac{1}{2}$ inches in width, but occasionally $3\frac{1}{4}$ and $7\frac{1}{4}$ inches. Either rivet buttons, ball and socket fasteners, or button fasteners, are used on the coat.—The cut herewith illustrates one of the new style coats manufactured by the La Crosse Rubber Mills Co., La Crosse, Wis.

"CLINGFAST" FINGER COTS.

ALMOST every druggists' sundries factory makes finger cots. As a rule the business is not thought by outsiders to be one of much importance, and yet at the same time, a conservative estimate of the amount manufactured in the United States is 150 gross a day, making a total of nearly 50,000,000 cots a

year. Finger cots, by the way, are used by stone masons, carpenters, fruit growers, and fruit stemmers, and in a great variety of industries to protect the fingers from staining. The best type of cot is that shown in the accompanying illustration and



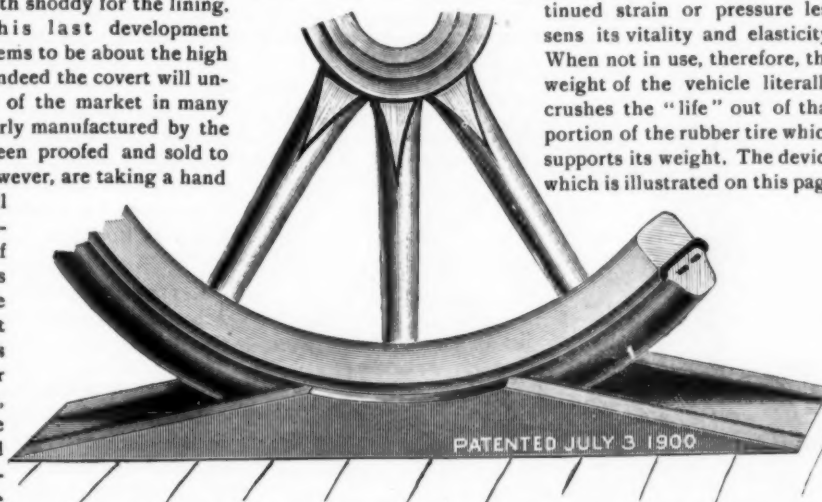
is known as the "Clingfast." In this cot the lower part is quite flexible and of thinner rubber, so that it adheres

closely to the finger; while the upper part of the cot, being of double thickness, is quite stiff and affords protection where most needed. The reinforced cot was the invention of the proprietor of the Huron Rubber Co. (Cleveland, Ohio) and when put on the market was an instant success. The failure of the inventor to apply for a patent, however, allows its manufacture to be undertaken by all others, a decided compliment to his inventive genius, although not particularly profitable to him.

WIGG'S PATENT RUBBER TIRE SUPPORT.

THE desirability of relieving solid rubber tires of the weight of the vehicle when not in use has become widely recognized. The nature of rubber—a vegetable product—is such that

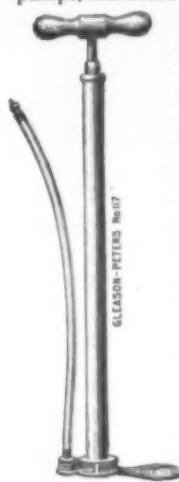
continued strain or pressure lessens its vitality and elasticity. When not in use, therefore, the weight of the vehicle literally crushes the "life" out of that portion of the rubber tire which supports its weight. The device which is illustrated on this page



has been designed to relieve the rubber tire entirely from supporting any burden when not in use—the weight resting upon the steel flanges of the tire. It is made under United States patent No. 653,048, issued to Curtis Wigg, July 3, 1900, and adapted to fit and support tires of the larger sizes of all standard makes. It is in use in the New York fire department, for the rubber-tired fire engines. The cut shows the device so made as to lie loosely on the floor, so that it may easily be moved about, though it is heavy and substantial enough to maintain its position while the wheels are being rolled into place. It is also made in another form, intended to be sunk to the level of the floor, in case the use to which it is to be put permits of its being located permanently. The patent protecting this apparently simple device is understood to be unusually broad in its claims. [Curtis Wigg & Co., Park Row building, New York.]

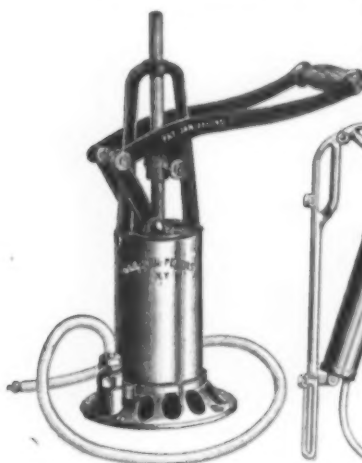
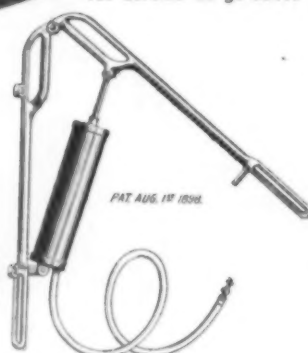
AUTOMOBILE TIRE PUMPS.

THE considerable business which has grown up in the supplying of air pumps for inflating cycle tires suggests what may happen along the same line in connection with automobile tires, for the inflation of which larger pumps are required, and different forms of construction. Herewith are illustrated several designs for automobile tire pumps, marketed by a leading firm, and for the convenience of those who may be interested, the catalogue numbers used by the manufacturer are used in identifying the cuts. The simplest form shown in the

No. 117.
CARRIAGE PUMP.No. 115.
CARRIAGE PUMP.

Carriage Pump (No. 117 and No. 105), having a cylinder 1 inch in diameter. These pumps are small and compact, and suitable for carrying in road wagons of light automobiles. No. 55 is a Portable Pump, having a 2 inch barrel, which can be used either by hand or affixed to a wall or bench or other support or to the frame of the automobile.

In the way of a Lever Pump, the manufacturers particularly recommend the design No. 4, having a cylinder $3\frac{1}{4} \times 6\frac{1}{4}$ inches, with a capacity for stroke of 36 cubic

No. 4.
LEVER PUMP.No. 55.
PORTABLE PUMP.

inches. The pressure per square inch is 150 pounds. The operating motion of this pump is mentioned as being natural and easy, the leverage increasing as the resistance increases. The yoke is fitted with a bronze metal bushing, which acts as a guide to the plunger rod, and can be replaced at small cost when worn, its object being to keep the plunger rod central, thereby keeping the cup leather

in its proper position. Levers, links and crossheads are of malleable iron castings, and the device on the whole is referred to as one of the most powerful hand air pumps made. Gleason-Peters Air Pump Co., Houston and Mercer streets, New York.]

A NEW ARMORED HOSE.

A RECENT issue of THE INDIA RUBBER WORLD described briefly what is known as the "Protector" hose. In the interval of a few months, however, the hose has had such a satisfactory reception that a more detailed description of it is timely. It, in the first place, is a distinct departure from other types of armored hose in that it is a flat braid put on under constant tension, and, once in position, is not liable to wear itself out, or to be injured from abrasions. The system of braiding holds the wire fast, even if it should be cut—a very unlikely contingency, by the way. The "lay" of the wire is so short that the hose is very flexible, and when curved returns to its first form without distortion. Its lightness is also another point in its favor, the armor running from 6 to 9 feet to the pound. Men who work with air and steam drill are therefore prejudiced in its favor at once, because it is so much easier to handle. The use of this armor increases the bursting strength enormously, indeed, it is almost impossible to burst it. The manufacturers, who are the Woven Steel Hose and Cable Co. (Trenton, N. J.) use only the highest grade of cast steel wire, flattened and double galvanized by a special process owned by the Roeblings. The Roeblings, by the way, were the first galvanizers of iron in the United States, and are noted for putting on a most tenacious coating which has a fine finish. The manufacturers of this hose use only the best of rubber hose for their armoring. They are turning out now a great variety of sizes of air drill hose, steam hose, and garden hose. They, however, are equipped to armor hose of almost any kind for rubber manufacturers and dealers. The personnel of the company is of interest from the fact that the names of the officers are well known both in the rubber and wire industries. They are John S. Broughton, president; John H. Janeway, Jr., vice president; and K. G. Roebling, secretary and treasurer.

RUSSIAN TOY FIGURES.

REFERENCE has been made already in these columns to the important scale on which the B. F. Goodrich Co. (Akron, Ohio) are engaging in the production of rubber toys. To the illustrations already presented of some of their novelties in this line may be mentioned the goods which they catalogue as "Russian Toy Figures," made in red rubber, the height of the figures measuring $7\frac{1}{4}$ inches. These toys not only are artistic in design and true to life, but they stand firmly and apparently are strong and durable. They are packed in boxes in sets of ten, a set comprising the assortment of figures shown in the accompanying illustration. The same company are making red rubber balls, and a number of other articles in the toy line, described in a recent catalogue.



RUSSIAN TOY FIGURES.

NEWS OF THE PLANTING COMPANIES.

OUT of the interest in the subject of planting rubber in Mexico developed by William D. Owen, of Indiana, while in Washington as a member of congress, and where he became acquainted with the late Minister Romero, of Mexico, has grown a series of companies, operating in the Ubero district, on the isthmus of Tehuantepec, whose prospects seem encouraging. Two companies have existed for some time past, having their headquarters at Indianapolis, the home of Mr. Owen, and composed of men of prominence in business and in public life in Indiana. These are the Mexican Coffee and Rubber Co., the parent company, and the Ubero Plantation Co. of Indianapolis, which have been mentioned from time to time in THE INDIA RUBBER WORLD.

The Ubero Plantation Co. of Boston was incorporated under the laws of Maine, August 10, 1900, with \$1,000,000 capital. The directors are:

Arthur W. Stedman (president), member of the firm of George A. Alden & Co., crude rubber importers (Boston), and director of the Massachusetts National Bank.

Frederick C. Hood (vice president), treasurer of the Hood Rubber Co. (Boston), manufacturers of rubber boots and shoes.

E. H. Nebeker (treasurer), late treasurer of the United States.

Thomas Moran, senator in Mexico.

William D. Owen, late congressman and secretary of state for Indiana.

W. I. Overstreet, New York.

Victor E. Seiler, president State National Bank, Logansport, Indiana.

The company own 3000 acres, adjoining the original Ubero tract, on which they purpose planting 1,000,000 coffee trees, 400,000 rubber trees, and 1,000,000 pineapple plants.

At this time is being organized The Isthmus Rubber Co. of Ubero, which will have a New Jersey charter, and principal offices at No. 29 Broadway, New York. Messrs. Owen and Overstreet, who are on the executive boards of the Indianapolis and Boston Ubero companies, will sustain a similar relation to the New York company, and the working staff in Mexico of all three—headed by F. L. Torres, sometime connected with the Dos Rios plantations—will devote the result of their experience to all three companies.

TEHUANTEPEC RUBBER CULTURE CO.

[Canton, Manatitlan, state of Vera Cruz, Mexico; offices: No. 35 Nassau street, New York.]

It is always interesting to know something about the *personnel* of a new company that is connected with the rubber business. THE INDIA RUBBER WORLD has taken pains to learn the records of the organizers of the Tehuantepec Rubber Culture Co., whose advertisement appears on another page, with the following result. Harry W. Bennett, president; William A. Brigham, vice president; and Squire Garnsey, secretary and treasurer, were all in the organization of the Woolson Spice Co., who put upon the market the well known "Lion" coffee and started the second largest coffee plantation in the world at Dos Rios, in Mexico. The original stock of the Woolson company was \$37,500; it paid in dividends in six years over \$1,000,000, and the company was then sold to the Havemeyers for \$2,200,000. The Dos Rios plantation has also been a marked success. It was in connection with coffee planting that the gentlemen above named became interested in the culture of rubber. They are putting the same intelligent energy in this business that they did in to the other.

MEXICAN PLANTATION CO.

[State of Vera Cruz, Mexico; offices: Fort Wayne, Indiana.]

INCORPORATED under the laws of Indiana November 20,

1900, with \$10,000 capital, fully paid. Harry E. Sprague, president; J. H. Orr, secretary and treasurer; B. F. Harper, attorney. The same persons form the board of directors. They have acquired 600 acres, on the Tesechoacan river, 90 miles from the gulf port of Alvarado, and purpose planting 125,000 rubber trees in the spring. The company offer for sale 1000 shares of plantation stock, to provide working capital.

LA ZACUALPA RUBBER PLANTATION CO.

[Department of Soconusco, state of Chiapas, Mexico; offices: San Francisco, California.]

A REPORT of O. H. Harrison, the resident director in Mexico, issued from San Francisco December 1, states that during the past year the following work was accomplished: 600,000 rubber trees transplanted; 1,000,000 rubber plants placed in nursery for transplanting in 1901; 1,000,000 plants started in seed beds for transplanting to the nursery.

THE Leavenworth Coffee and Rubber Co. (Leavenworth, Kansas), is mentioned as having a tract of 2000 acres, just above the Dos Rios plantation, on the isthmus of Tehuantepec. Some coffee, rubber, and vanilla have been planted. The president, D. A. Hook, is now in Mexico.

RECENT RUBBER PATENTS.

UNITED STATES PATENT RECORD.

ISSUED NOVEMBER 6, 1900.

- N O. 661,099. Tire for vehicle wheels. James B. David, Neath, England.
 661,124. Self healing compound for tire punctures. William B. Hartley, Southport, and Ora J. Parrish, Indianapolis, Ind., and Oscar M. Parrish, Chicago.
 661,129. Heel, concavo convex rubber. Frederick Nerger, Chicago.
 661,172. Automatic tire inflator. Paul F. Gillette, New York, assignor by mesne assignments to the United Specialty Co., same place.
 661,399. Apparatus for inflating pneumatic tires. Jules Emringer and Prosper E. Marchand, Paris, France.
 661,424. Horseshoe. Ernest F. Pflueger, Akron, Ohio.

ISSUED NOVEMBER 13, 1900.

- 661,593. Soft tread horseshoe. Charles Waste, Galesburg, Ill.
 661,595. Swimming apparatus. James S. Bartholomew, Guerneville, Cal.
 661,601. Elastic bicycle tire. Charles G. Fawkes, Denver, Col.
 661,614. Vehicle tire. Arthur H. Marks, Akron, Ohio, assignor to the Diamond Rubber Co.
 661,671-661,672. Tire or other valve. George H. F. Schrader, New York.
 661,673. Tire and valve attacher and valve therefor. George H. F. Schrader, New York.
 661,887. Automatic tire inflating device. Thomas H. McCauley, Port Arthur, Canada.
 661,915. Resilient tire for wheels. Jean P. Legrand, Levallois, Perret, France.

ISSUED NOVEMBER 20, 1900.

- 661,963. Securing flexible material to window sashes. Oliver M. Edwards, Syracuse, N. Y.
 661,965. Non slipping rubber tire. Kanute A. Enlind, Naugatuck, Conn.
 662,008. Tire for vehicles. William F. Masters, New York.
 662,083. Exercising and massage device. Bernard A. McFadden, New York.
 662,132. Inner tube for pneumatic tires. Theron R. Palmer, Erie, Pa.
 662,160. Non puncturable pneumatic tire. Edgar L. Alexander and Samuel B. Alexander, Indianapolis, Ind.
 662,177. Elastic tire for vehicles. Henry Tolman, Newton, Mass.
 662,208. Pneumatic tire and shoe. Aaron Vreeland, Bloomfield, N. J.
 662,231. Vulcanizer. Philipp Funck, Rochester, N. Y., assignor to Johnson & Lund, Philadelphia, Pa.
 662,332. Tire. William A. Wright, Atlanta, Ga.
 662,335. Floating body. Edward G. Bailey, Gainesville, Tex.

ISSUED NOVEMBER 27, 1900.

- 662,536. Grinding, polishing, or buffing machine. Joseph Koenig, Two Rivers, Wis., assignor to the Aluminum Manufacturing Co., same place.
- 662,640. Rubber tire setter. Arthur W. Grant, Springfield, Ohio, assignor by mesne assignments, to the Consolidated Rubber Tire Co. Original application filed February 7, 1898.
- 662,641-662,642. Device for equipping vehicle wheels with rubber tires. Arthur W. Grant, Springfield, Ohio, assignor by mesne assignments to the Consolidated Rubber Tire Co.
- 662,649-662,650-662,651. Rubber tire setter. Alvaro S. Krotz, Springfield, Ohio, assignor to the Consolidated Rubber Tire Co.
- 662,686. Rubber tire setter. Samuel W. Collins, Indianapolis, Ind., assignor by mesne assignments, to the Consolidated Rubber Tire Co.
- 662,695. Compound for rendering fabrics water repellant. Charles Lichtenstadt, Chicago.
- 662,714. Skirt. Henry J. Feuchtwanger, Elmira, N. Y., assignor to the Elmira Skirt Co.

DESIGN PATENTS.

- 33,534. Heel cushion. Martin Logan, New York. November 6.
- 33,543. Air cushion. Daniel Hogan, New York, and Christian William Meinecke, Jersey City, N. J., assignors to the Meinecke & Co., New York. November 13.
- 33,571. Rubber foot mat. Frank H. Turner, Hartford, Conn., assignor to the Hartford Rubber Works Co. November 13.
- 33,613. Air Cushion. Daniel Hogan, New York, and Christian William Meinecke, Jersey City, N. J., assignors to the Meinecke & Co., New York. November 27.
- 33,615. Hoof pad. Charles Frank Smith, Copenhagen, N. Y., assignor to Roderick W. McRae, Lawville, N. Y. November 27.

TRADE MARKS.

- 35,492. Certain named rubber goods. The Alden Rubber Co., Barberton, Ohio. Essential feature, the word "Arc." November 27.

ENGLISH PATENT RECORD.

APPLICATIONS.—1900.

- 18,797. Joseph Barton Scammell and Ernest Alfred Muskett, 56, Leadenhall street, London. Improvements in India rubber substitutes. October 22.
- 18,870. Morris Gondos, 18, Southampton buildings, Chancery lane, London. Improvements relating to pneumatic tires. October 22.
- 18,916. William Daugherty, 46, Lincoln's Inn fields, London. Tire setter and repairer. October 23.
- 18,964. Michael Hallanan, 53, Chancery lane, London. Improvements in horseshoe pads. October 23.
- 18,979. Edmund Cooke, 12, Upper Mallow street, Limerick. Improvements in and relating to tires for wheels of velocipedes and other vehicles. October 24.
- 18,982. Jens Henri Langgaard, 5, Clayton square, Liverpool. Improvements in tires for vehicles. October 24.
- 18,983. Arthur Cornelius Alexander, 2, Market street, Bradford. An improved dressing for harness, boots and shoes, and other articles made of leather. October 24.
- 18,984. Thomas Wilson, 38, Camp street, Ashton-under-Lyne. Respirator and eye protector for the use of persons in smoky or sulphurous atmosphere. October 24.
- 18,995. Wright Rhodes, 18, Hartford street, Coventry. Improved means for carrying inflators on velocipedes and the like. October 24.
- 19,025. Alfred Ernest Terry, 5, Corporation street, Birmingham. Improvements in chest expanders, exercisers, and the like. October 24.
- 19,052. Henry Nicoll, 4, South street, Finsbury, London. Improvements in waterproofing fabrics. October 24.
- 19,089. Kenneth Thomas Sutherland, 15, Duke street, Rusholme, Manchester. Improvements in the method of degumming or preparing leaf and stalk fibres. October 25.
- 19,127. Eduard Schroeder, 18, Ironmonger lane, London. Improved double-acting air pump for inflating tires, air cushions, and similar pneumatic devices. October 25.
- 19,140. John J. Bowes, Jr., 40, Chancery lane, London. Improvements in hose couplings. October 25.
- 19,176. Heinrich Richter, 21, Henmarket, Cologne, Germany. Tire. October 26.
- 19,177. Franz Clouth, 21, Henmarket, Cologne, Germany. India-rubber tire fastening for wheels. October 26.
- 19,211. Gustav H. Glaser, 6, Lord street, Liverpool. Process for in-

flating and preventing leakages in pneumatic receptacles and apparatus therefor. October 26.

- 19,230. Ernest Alfred Muskett and Joseph Barton Scammell, 56, Leadenhall street, London. Improvements in India-rubber substitutes. October 27.
- 19,270. Arthur Lark and Arthur Thomas Lark, 33, Cannon street, London. Metal heel plate with rubber cushion for boots, shoes, or clogs, and means of securing same. October 27.
- 19,305. Alfred Dales, 5, John Dalton street, Manchester. Improved horseshoe pad. October 29.
- 19,335. Mark Parker and Robert Thompson, 31, Tavistock square, London. Improved vehicle tire. October 29.
- 19,387. John Stark, 4, St. Ann's square, Manchester. Improved hoof pad for horses. October 30.
- 19,392. Karl Muller, 111, Hatton garden, London. Improved manufacture of cement. October 31.
- 19,446. Herbert Cecil Russell, 22, Southampton buildings, Chancery lane, London. Improvements in pneumatic tires. October 30.
- 19,504. Arthur Thomas Collier and The Collier Twin Tyre Co., Limited, 11, Southampton buildings, Chancery lane, London. Improvements relating to pneumatic tires and to means for securing such to wheels. October 31.
- 19,561. John Cockburn, 62, St. Vincent street, Glasgow. Improvements in tires. November 1.
- 19,614. Edwin Hemsted, 65, Chancery lane, London. Improvements in pneumatic tires. November 1.
- 19,648. Henry E. Purser and Frederick Thomas Glover, 5, Shakespeare road, Herne Hill, London. Asbestos and India-rubber, or asbestos, India-rubber, and canvas hose or tubing for the delivery of liquids or gas or for suction purposes. November 2.
- 19,705. William Hardy, 66, Austin terrace, Gerlestone, Suffolk. Improved method for pressing down the India-rubber patches used for mending the air tubes of pneumatic tires. November 3.
- 19,732. John Parsons, Jr., Saint Teath, near Camelford, Cornwall. Metallic armor chain for the prevention of punctures in pneumatic tire tubes. November 3.
- 19,841. Henry Harris Lake, 45, Southampton buildings, Chancery lane, London. Improvements relating to the manufacture of elastic surgical appliances. [The Firm Rossi Berlam, Italy.] November 5.
- 20,120. Jonathan Aldous Mays, 75, Chancery lane, London. Improvements in elastic tires. November 8.
- 20,175. Alfred Whiteway and Charles Macintosh & Co., Limited, 70, Deansgate, Manchester. Improvements in the manufacture of mats of India-rubber compounds. November 9.
- 20,220. William Frederick Williams, 53, Chancery lane, London. Improvements in elastic tires. November 9.
- 20,227. William Arthur Griffiths, 20, Digbeth, Birmingham. Improvements in the covers of pneumatic tires. November 10.
- 20,258. William Frederick Williams, 53, Chancery lane, London. Improvements in and apparatus for the manufacture of elastic tires. November 10.
- PATENTS GRANTED.—APPLICATIONS OF 1899.
- 14,248. Valve and method of securing same to pneumatic tires. Chinn, T. J., 42, Russell street, Stretford road, Manchester. July 11.
- 14,417. Non puncturable pneumatic tire. Wicks, Joseph Thomas Ferndale, Tamworth road, Gravelly hill, Birmingham. July 13.
- 14,597. Metal and rubber tire. Gare, T., Bramble Beach, Warren Drive, New Brighton, Cheshire. July 15.
- 14,646. Method of attaching tire to rim. Trench, A., Dromkeen House, Cavan, Ireland, executor of Trench, F. J. July 15.
- 14,686. Varnishes. Nauhardt, O. P., 18, Boulevard Magenta, Paris, France. July 17.
- 14,688. Marine life saving belt. Jurgschat, F. W., 15, Hufen, Bahnstrasse, Königsberg, Prussia. July 17.
- 14,910. Molding tires. Schanz, J., Leipzigerstrasse, 91, Berlin. July 19.
- 15,026. Cements. Cochrane, W. R., 37, Eglinton street, Glasgow. July 21.
- 15,163. India-rubber substitutes. Bedford, J. E., and Bedford, C. S., Kirkstall road, Leeds, and Reddaway, F., Didsbury Lodge, Manchester. July 24.

American Inventions.

- 14,037. Exercising appliances. Gardner, H., 166, Fleet street, London. [Hendrickson, A. A.; New York.] July 7.
- 14,808. Pneumatic tire. Marks, A. H., Akron, Ohio. July 18.
- 14,809. Carriage tire. Marks, A. H., Akron, Ohio. July 18.
- 14,810. Dental dams. Allen, C. C., No. 507 Rialto building, Kansas City, Mo. July 18.

INDIA-RUBBER GOODS IN COMMERCE.

AMERICAN RUBBER GOODS EXPORTS.

THE exports of American rubber footwear have now reached a larger volume than ever before. Prior to this year the record was held by the fiscal year 1854-55—before the manufacture of rubber shoes in Europe—when 1,014,158 pairs were exported. Later the American exports in this line dropped to a very small figure, but of late there has been a steady growth. The number of pairs exported during the ten months January to October, inclusive, during three years past have been as follows:

	1898.	1899.	1900.
	301,084	460,823	1,014,810

MONTHS.	Belting, Packing, and Hose.	Boots and Shoes.	All other Rubber.	TOTAL.
Jan.-June....	\$262,761	\$198,022	\$751,171	\$1,211,954
July.....	54,965	53,503	110,456	218,924
August.....	42,114	98,761	139,212	280,087
September....	41,764	61,613	116,700	220,077
October.....	42,335	114,979	143,422	300,736
Total.....	\$443,929	\$526,878	\$1,260,961	\$2,231,778
Total, 1899.	(a)	238,815	1,253,388	1,698,308
Total, 1898.	(a)	168,398	1,212,737	1,381,135

(a) Not separately reported prior to July 1, 1899.

WHERE AMERICAN RUBBER GOODS GO.

EXPORTS classed as "India-rubber goods" at the New York custom house were shipped from this port during the four weeks ended November 27, in value as follows:

Great Britain..\$44,887	Gibraltar.....	224	Peru.....	58
Germany.....15,959	Azores.....	287	Venezuela....	741
France.....6,128	Mexico.....	4,085	Australia.....	13,115
Belgium.....2,432	Central Amer.	1,409	New Zealand..	8,334
Holland.....1,115	Cuba.....	3,991	Philippines... 1,239	
Austria.....1,037	Porto Rico...	279	China.....	520
Hungary.....360	San Domingo.	87	Hong Kong... 25	
Roumania.....1,020	British W. Ind.	525	Japan.....	1,828
Turkey.....1,640	Dutch W. Ind.	40	British E. Ind.	832
Norway.....499	Argentina....	170	Dutch E. Ind.	30
Sweden.....381	Brazil.....	497	British Africa.	4,081
Denmark.....1,603	Chile.....	811		
Switzerland... 211	Colombia....	364	Total...\$122,540	
Spain.....375	Dutch Guiana.	15		
Italy.....823	Ecuador.....	483		

Previous exports from New York have been:

Four weeks ending July 31....	\$110,391
Five weeks ending September 4	145,541
Four weeks ending October 2	94,665
Four weeks ending October 30....	105,614

Some other imports to be considered for the four weeks ended November 27 are the following:

Dress Shields.—To Southampton \$4824; Liverpool \$126; Antwerp \$744; Hamburg \$3828; Genoa \$863; New Zealand \$487; total \$10,872.
Clothes Wringers.—To Great Britain \$10,109; Germany \$931; Holland \$1970; Norway \$171; Denmark \$435; Belgium \$96; Australia \$832; New Zealand \$1607; British Africa \$727; Mexico \$23; total \$16,931.

India-rubber Thread.—To all ports \$20,039.

India-rubber Scrap.—To Glasgow \$6536; Liverpool \$4771; London \$1300; Havre \$5883; Genoa \$218; total \$18,708.

India-rubber Machinery.—To Hamburg \$3000.

AMERICAN IMPORTS OF RUBBER GOODS.

THE value of the imports of India-rubber and Gutta-percha goods during the first ten months of each year has been:

	1898.	1899.	1900.
India-rubber goods.....	\$275,835	\$384,314	\$469,508
Gutta-percha goods.....	100,781	135,062	240,182
Total Imports.....	\$376,616	\$519,376	\$709,690
Reexports.....	72,489	57,911	18,570
Net Imports.....	\$304,127	\$461,465	\$691,120

Official reports from Washington give the following values of imported rubber goods entered for consumption in the United States for the past two fiscal years:

MANUFACTURES OF—	Value, 1898-99.	Value, 1899-00.
Gutta-percha.....	\$114,792.00	\$267,490.50
India-rubber.....	159,300.68	212,704.44
Hard rubber.....	176,474.00	311,140.65
Elasticon.....	30,602.00	29,234.00
Total.....	\$481,168.68	\$820,569.59

The amount of duties collected on such goods increased from \$155,155.61 in the former year to \$272,179.05 in the latter.

One item to be considered in determining the reason for the increasing value of imports of Gutta-percha goods—in addition to golf balls—is Gutta-percha insulated mining fuse, which is now arriving in considerable quantities.

GERMAN FOREIGN RUBBER GOODS TRADE.

THE value of exports and imports of merchandise classified in the German customs as "Kautschuk und Guttapercha Waren" for the first nine months of the calendar year, as officially stated, has been as follows (in marks):

	Imports.	Exports.
January-September, 1898.	8,502,000	34,110,000
January-September, 1899.....	6,913,000	35,109,000
January-September, 1900.....	10,600,000	41,340,000

The German exports of hard rubber goods for the same months for two years past have amounted, in kilograms, as follows:

COUNTRIES.	1899.	1900.
Belgium.....	19,100	26,900+
Denmark.....	9,600	11,700+
France.....	110,100	145,000+
Great Britain.....	139,800	147,200+
Italy.....	12,100	23,700+
Netherlands.....	13,000	11,900—
Norway.....	12,600	11,100—
Austria-Hungary.....	36,900	45,700+
Russia.....	43,800	48,800+
Sweden.....	26,400	56,200+
Switzerland....	15,500	16,300+
Spain.....	16,600	13,900—
Argentina.....	.....	15,000+
United States ..	44,600	44,600=
Other lands ..	80,200	71,500—
Total.....	580,300	689,500+
Value.....	marks. 4,642,000	5,861,000

[+ Indicates Increase; — Decrease; = No change.]

The increase in weight in 1900 over 1899 was 19 per cent. and the increase in value 26 per cent. It will be seen that the amount of exports to the United States has remained stationary in volume, but they must have increased in value, judging from the growing value of imports of hard rubber goods into this country.

Official Statistics of India-Rubber and Gutta-Percha.—United States.—Fiscal Year 1899-1900.

INDIA-RUBBER.

I.—Imports of Crude India-Rubber, by Countries.

FROM—	Pounds.	Value.
Europe:		
Belgium.....	2,844,404	\$ 2,243,964
France.....	1,198,209	745,592
Germany.....	1,750,489	892,246
Netherlands.....	106,621	68,122
Portugal.....	2,488,114	1,719,311
United Kingdom.....	8,611,061	5,562,680
Total.....	16,908,907	\$11,231,915
North America:		
British North America.....	9,757	6,487
Mexico.....	450,712	214,886
British Honduras.....	51,295	23,852
Costa Rica.....	134,789	78,870
Guatemala.....	204,546	74,566
Honduras.....	176,731	83,184
Nicaragua.....	827,087	523,131
Salvador.....	54,971	18,900
West Indies—British.....	17,964	4,443
Cuba.....	327	196
Total.....	1,922,179	\$1,028,504
South America:		
Brazil.....	28,026,714	17,876,121
Chile.....	15,176	16,394
Colombia.....	815,091	439,632
Ecuador.....	826,411	421,283
Guiana—Dutch.....	215	118
Peru.....	8,211	5,315
Uruguay.....	785	480
Venezuela.....	119,415	77,709
Total.....	29,811,978	\$18,831,082
Asia:		
China.....	2,168	828
British East Indies.....	640,483	284,156
Hongkong.....	1,423	383
Total.....	644,074	\$285,366
GRAND TOTAL.....	49,377,138	\$31,376,867
Total, 1898-99.....	51,063,068	\$1,707,030
Total, 1897-98.....	46,055,497	25,386,010
Total, 1896-97.....	35,574,449	17,457,976
Total, 1895-96.....	36,774,460	16,603,020
Total, 1894-95.....	39,741,607	18,353,121
Total, 1893-94.....	33,757,783	15,077,933
Total, 1892-93.....	41,547,640	17,809,239
Total, 1891-92.....	39,976,205	19,718,214
Total, 1890-91.....	33,712,089	17,556,280

II.—Exports of Crude India-Rubber, by Countries.

To—	Pounds.	Value.
Belgium.....	11,241	\$ 8,068
France.....	96,291	69,789
Germany.....	183,101	125,357
Netherlands.....	2,286	2,149
United Kingdom.....	700,904	534,237
Quebec, Ontario, etc.....	2,746,879	2,010,201
British East Indies.....	245	225
Japan.....	10,756	10,020
Total, 1899-1900.....	3,751,698	\$2,760,046
Total, 1898-99.....	2,806,494	1,840,482
Total, 1897-98.....	2,717,418	1,462,973
Total, 1896-97.....	3,437,213	1,749,072
Total, 1895-96.....	2,891,072	1,448,941
Total, 1894-95.....	1,384,048	662,839

III.—Imports of Manufactures of India-Rubber, by Countries.

[+ Indicates increase; — indicates decrease.]

FROM—	Value.
Austria-Hungary.....	\$ 2,467+
Belgium.....	4,788+
Denmark.....	13+
France.....	98,599+
Germany.....	163,946+
Italy.....	464+
Netherlands.....	289+
Sweden and Norway.....	25+

FROM—

Value.

Switzerland.....	138+
United Kingdom.....	291,647+
British North America.....	1,629+
Mexico.....	20+
West Indies.....	3—
China.....	32—
Other Asia.....	29—

Total, 1899-1900.....\$564,083

Total, 1898-99.....379,309

Total, 1897-98.....309,247

Total, 1896-97.....297,953

Total, 1895-96.....294,228

Total, 1894-95.....315,902

Total, 1893-94.....309,308

Total, 1892-93.....338,435

Total, 1891-92.....371,580

Total, 1890-91.....354,645

IV.—Exports of Manufactures of India-Rubber (and Gutta-Percha), by Customs Districts.

FROM—	Belt, Packing, and Hose.	Boots and Shoes.	Other Rubber Goods.
Baltimore.....	\$ 15	\$...	\$ 12,395
Bangor.....	4,188	222	1,122
Boston.....	22,886	168,762	61,676
Newport News.....	365,644	227,128	867,652
New York.....	1,539	722	3,619
Passamaquoddy.....	538	19	2,118
Philadelphia.....	94	697	716
Portland, Me.....	12	9	29
Wiscasset.....	28	29	29
Brazos de Santiago.....	93	218	829
Corpus Christi.....	236	46	1,892
Key West.....	3,653	57	4,110
Mobile.....	30,231	46	7,184
New Orleans.....	5,430	2,308	1,269
Paso del Norte.....	373	66	2,846
Pensacola.....	10,903	9,401	14,777
Saluria.....	1,019	4	205
Alaska.....	55,482	13,359	100,862
Arizona.....	1,360	657	41,886
Puget Sound.....	8	211	280
San Diego.....	9,389	10	7,196
San Francisco.....	17	10	10
San Rafael.....	22	3	3
Cape Vincent.....	18,351	77	5,024
Champlain.....	28	16	14,467
Chicago.....	167	2	36
Cuyahoga.....	104,718	5,704	24,668
Detroit.....	7,203	2,414	411
Duluth.....	594	50	3,270
Genesee.....	9	67,719	67,719
Huron.....	1,404	4,663	...
Memphremagog.....	...	...	...
Minnesota.....	...	...	...
Montana and Idaho.....	...	...	...
Niagara.....	...	...	...
Dakotas.....	...	...	...
Oswegatchie.....	...	...	...
Oswego.....	...	...	...
Superior.....	...	...	...
Vermont.....	...	...	...
Total.....	\$541,830	\$420,746	\$1,405,312

GUTTA-PERCHA.

I.—Imports of Crude Gutta-Percha, by Countries.

FROM—	Pounds.	Value.
Germany.....	164,164	\$53,369
Netherlands.....	2,205	309
United Kingdom.....	128,651	91,792
Canada.....	2,359	1,615
Colombia.....	29	15
Dutch Guiana.....	286	32
British East Indies.....	129,788	31,259
Dutch East Indies.....	166	134
Total, 1899-1900.....	427,678	\$178,616
Total, 1898-99.....	518,339	167,577
Total, 1897-98.....	638,477	159,381
Total, 1896-97.....	1,117,665	100,187
Total, 1895-96.....	3,843,854	178,513
Total, 1894-95.....	1,326,794	122,261
Total, 1893-94.....	498,763	84,340

NOTE.—The larger imports in former years included Balata, Pontianak, etc., which are now no longer classified as Gutta-percha.

II.—Exports of Crude Gutta-Percha, by Countries.

To—	Pounds.	Value.
Germany.....	8,034	\$3,183
Canada.....	7,304	5,761
Total, 1899-1900.....	15,338	\$8,944

III.—Imports of Manufactures of Gutta-Percha, by Countries.

FROM—	Value.
France.....	\$ 24,741
Germany.....	156,009
United Kingdom.....	69,516
Canada.....	14
Cuba.....	3,482
Total, 1899-1900.....	\$254,332
Total, 1898-99.....	116,582
Total, 1897-98.....	186,297
Total, 1896-97.....	97,194

IV.—Exports of Foreign Manufactures of India-Rubber and Gutta-Percha, by Countries.

To—	Value.
India-Rubber:	
Belgium.....	\$ 174
Germany.....	50
United Kingdom.....	20
British North America.....	4,779
Central America.....	68
Mexico.....	39
Hawaiian Islands.....	4,500
Gutta-Percha:	
British North America.....	2,978
Mexico.....	256
Total, 1899-1900.....	\$12,874

RUBBER-SCRAP.

I.—Exports of Domestic "India-Rubber Scrap," or Reclaimed Rubber, by Countries.

To—	Value, 1896-97.	Value, 1897-98.	Value, 1898-99.	Value, 1899-00.
Austria-Hungary.....	\$...	\$...	\$...	\$3,498
Belgium.....	...	...	...	1,597
France.....	23,975	28,682	9,606	2,376
Germany.....	2,115	22,970	30,706	56,263
Italy.....	...	8,179	6,890	16,119
Netherlands.....	...	184	463	2,923
Russia.....	...	...	2,600	2,083
Spain.....	...	...	146	...
Sweden—Norway.....	...	411	8,325	6,149
Great Britain.....	59,152	98,788	110,747	125,902
Canada.....	34,198	95,933	168,588	259,416
Mexico.....	...	1,373	24,653	9,226
Japan.....	...	505	1,330	2,214
Other lands.....	...	314	138	60
Total.....	\$119,440	\$257,630	\$376,962	\$492,284

II.—Exports of Reclaimed Rubber by Customs Districts.

FROM—	Value.
Boston.....	\$ 21,669
New York.....	127,467
Philadelphia.....	71,084
Key West.....	9,238
Champlain, N. Y.....	28,064
Niagara.....	31,305
Oswegatchie.....	11,174
Vermont ports.....	177,870
Other ports.....	4,561
Total, 1899-1900.....	\$492,284

EXPORTS OF AMERICAN RUBBER GOODS.

"PARAGON" FIRE HOSE AT PARIS.

FISCAL YEAR ENDED JUNE 30, 1900.

EXPORTED TO—	Belting, Packing, and Hose.	Boots and Shoes.		Other Goods Value.	Total Value.
		Pairs.	Value.		
EUROPE :					
Austria-Hungary	\$ 168	4,322	\$ 2,099	\$ 18,755	\$ 21,022
Azores	48	120	412	532	600
Belgium	6,290	9,753	4,890	45,154	56,294
Denmark	3,809	6,484	4,364	8,836	16,709
France	8,704	153,865	54,680	26,707	100,091
Germany	24,510	141,206	58,946	146,192	225,648
Gibraltar	1,982	230	170	249	249
Italy	1,982	230	170	61,503	63,655
Netherlands	2,644	318	145	19,642	22,431
Portugal	54	...	...	366	420
Russia, Baltic	1,698	...	...	20,102	21,800
Russia, Black Sea	800	...	...	...	800
Spain .....	...	13,519	6,442	695	7,037
Sweden, Norway	3,456	884	414	9,806	13,676
Switzerland	822	3,810	1,132	366	2,320
Turkey in Europe .....	...	7,006	3,844	63	8,907
United Kingdom	108,194	305,619	166,804	393,317	668,315
Total, Europe	\$163,101	647,189	\$301,040	\$766,765	\$1,230,506
NORTH AMERICA :					
Bermuda	\$ 450	...	\$...	\$ 564	\$ 1,014
British Honduras	23	24	9	617	649
Nova Scotia, New Bruns.	14,419	18,880	19,996	11,572	46,387
Quebec, Manitoba	37,793	8,661	4,662	307,968	350,320
British Columbia	19,537	6,764	15,146	24,447	88,980
Newfoundland, Labrador	3,019	4,985	4,087	1,022	8,119
Costa Rica	3,502	36	17	2,697	6,216
Guatemala	1,041	146	80	2,534	3,655
Honduras	2,337	15	15	869	3,221
Nicaragua	1,796	288	193	1,306	3,295
Salvador	898	...	...	1,557	2,455
Mexico	82,433	1,894	1,043	47,538	130,834
Miquelon, Langley	32	2,953	4,021	40	4,093
West Indies—British	4,891	90	111	1,865	6,867
Danish	291	15	11	35	337
Dutch	182	...	...	191	343
French	13	4	12	19	44
Cuba	39,128	5,740	3,793	30,844	73,765
Porto Rico	2,729	232	198	4,165	7,092
Haiti	243	38	24	479	746
Santo Domingo	1,535	24	8	606	2,149
Total, North America	\$216,053	49,798	\$ 53,326	\$441,182	\$710,531
SOUTH AMERICA :					
Argentina	\$ 6,319	1,534	\$ 1,501	\$ 6,085	\$ 13,905
Brazil	3,055	3,016	2,874	13,465	19,394
Chile	7,897	264	672	3,677	12,246
Colombia	3,655	8,932	1,442	2,539	7,636
Ecuador	3,188	168	79	1,464	4,731
Gulanas—British	280	...	...	354	634
Dutch	731	...	...	73	804
French .....	...	...	...	13	13
Peru	4,864	290	177	4,607	9,648
Uruguay	403	288	107	658	1,168
Venezuela	1,665	...	...	1,397	3,063
Total, South America	\$ 32,058	9,492	\$ 6,852	\$ 34,332	\$ 73,242
ASIA :					
China	\$ 5,253	428	\$ 741	\$ 3,104	\$ 9,098
Russian	225	26	25	581	831
East Indies—British	3,489	163	85	2,071	5,745
Dutch	445	...	...	15	460
Hong Kong	2,130	708	1,145	2,137	5,412
Japan	22,889	21,285	15,630	40,836	79,346
Korea	510	...	...	2,238	2,748
Russia, Asiatic	2,748	...	...	870	3,618
Turkey in Asia .....	...	80	61	17	72
Other Asia .....	...	...	...	42	42
Total, Asia	\$ 37,880	32,654	\$ 17,662	\$ 51,356	\$106,898
OCEANIA :					
Auckland, Fiji .....	...	...	...	\$ 360	\$ 360
Australasia	54,325	34,513	25,769	44,767	134,861
French Oceania	1,412	14	30	716	2,188
Hawaiian Is.	19,774	2,070	4,631	41,715	66,120
Philippines	637	92	205	4,094	4,936
Tonga, Samoa .....	...	...	...	62	62
Total, Oceania	\$ 76,148	36,689	\$ 40,635	\$ 91,714	\$208,497
AFRICA :					
British Africa	\$ 12,443	1,258	\$ 1,189	\$ 18,241	\$ 31,843
Canary Islands .....	...	...	...	89	89
French Africa .....	...	24	72	...	72
Portuguese Africa	1,775	...	...	1,453	3,228
Other Africa	2,372	...	...	110	2,482
Total, Africa	\$ 16,570	1,282	\$ 1,231	\$ 19,893	\$ 37,714
Grand Total, 1900	\$341,830	767,104	\$420,746	\$1,405,212	\$2,367,788
Grand Total, 1899	(a) 496,586	\$260,886	\$1,504,499	\$1,705,385	
Grand Total, 1898	(a) 391,832	224,705	1,499,157	1,723,862	
Grand Total, 1897	(a) 306,026	195,499	1,611,646	1,807,145	
Grand Total, 1896	(a) 350,713	216,657	1,642,499	1,865,156	
Grand Total, 1895	(a) 383,799	225,946	1,279,156	1,505,142	
Grand Total, 1894	(a) 281,657	155,011	1,306,831	1,461,842	
Grand Total, 1893	(a) 420,950	252,391	1,357,013	1,809,404	
Grand Total, 1892	(a) 231,105	185,570	1,232,497	1,418,067	

(a)—Belting, Packing, and Hose were included in the column of "Other Goods, Value," previous to the past fiscal year.]

THE Eureka Fire Hose Co. (No. 13 Barclay street, New York) have received from Fire Chief Hale, of Kansas City, the following data regarding the test of 500 feet of 2½ inch "Paragon" fire hose, with couplings complete, which he took with him to the Paris Exposition and used at the international firemen's convention, held August 7-19, 1900. The conditions imposed were severe, and the results are the more interesting accordingly. At a water pressure of 240 pounds to the square inch (which was the average pressure carried on the steamer used), and using a 1¼ inch nozzle, a horizontal stream was thrown a distance of 310 feet, through 250 feet of 2½ inch "Paragon" fire hose. Using two 1 inch nozzles a stream was thrown a distance of 208 feet, the two performances winning the world's championship for the Kansas City team. "Paragon" fire hose weighs about 50 pounds per length of 50 feet, and is a seamless, circular, solid woven, two ply cotton fabric, rubber lined hose. Each ply is a perfect hose in itself, having is individual series of warp threads and its own filling threads, so that one of the plies may be entirely worn away and the second yet remain an uninjured and serviceable hose. The plies are woven simultaneously, thereby insuring uniformity, and are jacketed into one solid homogeneous fabric by means of binder warps which bind the two fabrics into one. The advantages of distinct plies, each one of which is a serviceable hose, is obvious. "Paragon" hose is treated with the best antiseptic compound that expert chemists have been able to devise, and the Eureka Fire Hose Co. have 16,000 square feet of factory floor space, equipped with expensive appliances and operated by a force of careful and experienced men, devoted to its mildew proofing operations—a most important feature in cotton hose manufacturing. Many thousand feet of "Paragon" hose have been supplied to the United States navy, every section of which passed the severe test of the navy department.

ORIGIN OF GUTTA GOLF BALLS.

THE real inventor of the "guttie" ball, according to W. Dalrymple, in *Golf Illustrated*, of November 30, was a gentleman well known in the United States. The story goes: The Rev. Robert A. Paterson, for many years principal of the Binghamton Ladies' College, New York state, was a St. Andrew's boy. In 1845 he first rolled a lot of Gutta-percha clippings, which were used in his father's business—I am not aware of what nature this was—into a ball, painted it, and used it on the links, vainly trying to keep it white, and coming back each time with a cracked ball. His brother in Edinburgh improved on it, and sent many to St. Andrew's stamped "Paterson's Composite Golf Ball." R. A. Paterson, the boy, left some with Melville Fletcher, South street, and Joseph Cook, Market street, booksellers, and they lay ignominiously in the window and were finally dusted out.

He then took some to a Mr. Stewart—at that time in charge of the old "Union Parlor"—and to Allan Robertson's, where Allan and old Tom Morris, then in Allan's employment, were stuffing feathers into queer skins as if for dear life. Allan examined them closely, and then showed the whites of his great handsome eyes, but never spoke a word. Old Tom rolled the white balls over, and handed them back—all thumbmarks.

Recent correspondence between Dr. Paterson and Old Tom tells that the die was cast for the Gutta then and there, and that the old "feather" had received its death blow. This was on the eve of Paterson's departure for America, and he never heard much about his venture in guttas till forty years after.

THE RUBBER TIRE INTEREST.

ANOTHER TIRE ROYALTIES SUIT.

APPPLICATION was made before Judge William R. Day, in the United States circuit court at Cleveland, on November 16, by the Goodyear Tire and Rubber Co. (Akron, Ohio) for an order to restrain the Single Tube Automobile and Bicycle Tire Co. from revoking the license of the plaintiff company to manufacture tires under the Tillinghast patent. The order was granted temporarily and a hearing set for a time when both parties could be present—November 26, at Canton, Ohio. On the latter date the temporary restraining order was continued, pending an adjudication of the question of royalties claimed by the Single Tube company to be due from the Goodyear company on tires supplied on certain "optional" contracts made prior to January 1, 1900, the date at which the license to the Goodyear company was to become operative. It will be remembered [see THE INDIA RUBBER WORLD, September 1, 1900] that last summer suit was filed in the same court by the Single Tube company to restrain the Goodyear Tire and Rubber Co. from selling certain tires at the prices quoted by them, and incidentally to enforce the payment of the royalties above referred to. A decision by Judge Day left the Goodyear company free to continue their tire business as before, but failed to dispose of the question of royalties. Later the Single Tube company gave notice of an intention to revoke the license of the Goodyear company if the disputed royalties were not paid, and the action at law above reported is the first outcome of such notice. As the matter stands, the license cannot be cancelled pending the determination of the question whether the royalties claimed are due, and if the judgment of the court should be against the Goodyear company—who are under bond to the court for \$20,000—by the payment of whatever amount the court may fix for past royalties the license is left unimpaired.

DIAMOND INNER TUBE TIRE.

A NEW double tube bicycle tire, involving some novel features covered by patents owned by the Diamond Rubber Co. (Akron, Ohio) will be on sale in time for the coming season's



DIAMOND INNER TUBE.

MECHANICAL JOINT.

trade. One feature of the new tire will be the absence of closed ends in the inner tube, which have been the basis of much of the objection to double tube tires hitherto. The "Diamond" tire inner tube forms a continuous air chamber, through the use of an ingenious coupling device. This consists of a mechanical joint which can be taken apart quickly, whenever it is desired to draw the tube from the outer casing. The joint consists of a rubber cylinder thick enough to preserve its shape even under heavy pressure. The ends of the

tube are lapped over this cylinder and are held in place by two rubber bands fitting into the grooves. When the joint is properly made the ends of the tube will not pull apart in use and the tube is guaranteed not to leak, since the greater the air pressure, the tighter the joint becomes. Another feature of this inner tube is the possibility of repairing it on the inside, an advantage of which is that the air pressure within the tube acts to set the patch only, whereas in some other double tube tires, where the patch is placed on the outside of the air tube, the pressure of this tube often acts to cement the patch to the casing. By eliminating the use of vulcanized butt ends for inner tubes, a tire is produced which does not infringe upon the double tube construction of the Morgan & Wright tires. Moreover, in case the new double tube tire should come into good demand, the Diamond Rubber Co. will be enabled to supply their customers with tires without the payment of royalties under the Tillinghast patent. By the way, it is understood that this has been a potent consideration with the company in leading them into their new departure. The Diamond company will continue, however, to make tires under the Tillinghast patent. The new principle is intended to apply only to bicycle tires. The new tire, when guaranteed for a season, will be known as the "Diamond 1920" tire; when unguaranteed, as the "Waldorf-Astoria."

THE VICTOR "DOVETAIL" TIRE.

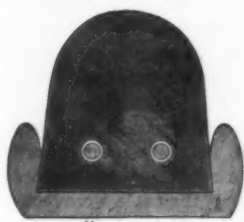
THIS tire differs from some other solid carriage tires in not being made with its widest point just below the top of the flanges, where the rubber is likely to cut. In use, the weight of the load goes directly to the bottom of the tire, which is the widest part and, therefore, best adapted to sustain it. Another feature is that the retaining wires, holding the tire in the channel iron, are reinforced by an additional grip which is given the rubber, under load, by the dovetail shoulders of the flanges, making it impossible for the tire to move laterally. Similarly the rubber, being forced into the dovetail corners of the channel iron, becomes locked to an extent which prevents it from traveling or creeping. The point is made, also, that when an obstruction is met on the road by this tire, the base of the tire remains perfectly rigid in the channel, the resiliency of the rubber, from the periphery of the flanges to its tread, furnishing ample movement to take away the jar and ride easily over the obstruction. A new machine has been designed exclusively for putting on the "Dovetail" tire. [The Victor Rubber Co., Springfield, Ohio.]

LATIMER COMPOUND SPRING RUBBER TIRE.

THE retaining wire in the construction of this tire is reinforced by a compound coiled spring, designed to prevent the wire from cutting the rubber. The use of the springs is designed also to render the tire more resilient than the ordinary solid tire, and therefore more durable. The compound wires are in telescopic or tubular engagement with each other, and imbedded in the body of the rubber at a high pressure, so as to form a solid mass of rubber and springs. It is pointed out as only necessary to allow about four inches of compression in putting on this tire, the compound spring saving the difference in compression between the four inches and the eight or ten inches allowed in some other tires. [The Latimer Rubber Tire Co., No. 24 South Clinton street, Chicago.]

THE KELLY-SPRINGFIELD SOLID TIRE.

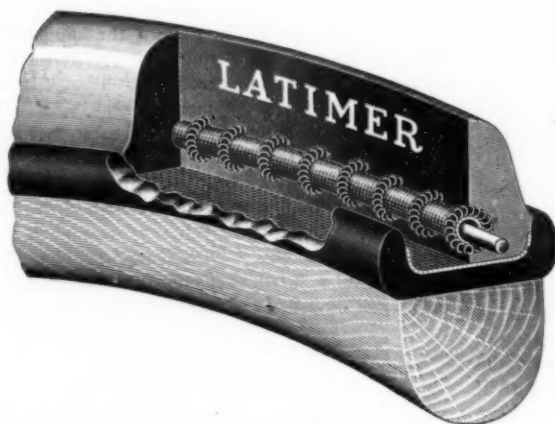
THE illustration shown in this paper, of the above named



VICTOR "DOVETAIL" TIRE.



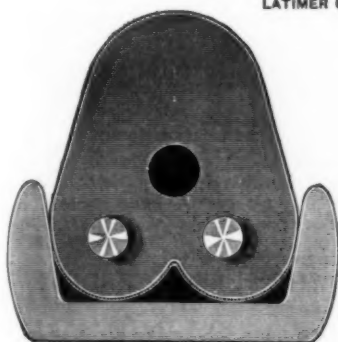
KELLY-SPRINGFIELD TIRE.



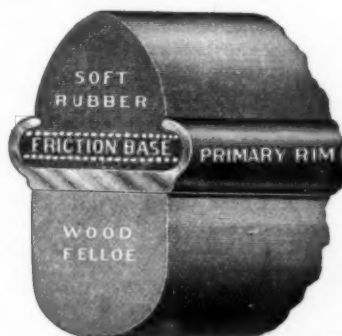
LATIMER COMPOUND SPRING RUBBER TIRE.



COLUMBIAN TIRE FASTENING.



STEIN CUSHION TIRE.



STANDARD SOLID TIRE—No. 1 AND No. 2.



tire, which was the first of the solid wired-on rubber tires now in use to be placed on the market, exhibits the two wired type, for light vehicles, and the four wired, for automobiles, heavy trucks, fire engines, and the like. This tire has been used for equipping some of the heaviest pieces of wheeled apparatus owned by the New York fire department, as well as for about every other type of vehicle that one can think of. The retaining wires are brazed electrically by means of a special outfit. [Consolidated Rubber Tire Co., No. 40 Wall street, New York.]

COLUMBIA SOLID TIRE AND FASTENING.

It is claimed for the Columbia Lock Fastening, that this method, instead of thickening the joint, as tapes joined by rivets do, is stronger, more flexible, and simpler than riveted joints, and leaves the joint as flexible as the tape itself. It also permits of the using of galvanized tapes and fastenings, which are warranted by makers not to waste out or rust when used in applying tires, as round wires and tapes not protected by galvanizing do. It is well known that a large percentage of the

solid rubber tires do not wear out in service, but on account of the wires and tapes being covered with barnacles of rust, caused by moisture, which commence to form as soon as tires are placed in service, and have the direct result of wasting wire or tape, causing loose tires. Also the rocking motion of rubber in channels, which causes rubber to chafe against the coarse sharp projections of rust on wires and tapes, rasping the holes from the inside, and causing the rubber to split from the inside. It is also well known that wires and tapes which are galvanized, cannot be brazed or welded, but that it must be held by some simple fastening. It is claimed for this method that it is the most rapid working equipment yet devised—one which a novice learns to use at once. The India Rubber Co.'s rubber is used in the Columbia tires. [The Columbia Vehicle Tire Co., No. 97 Haverhill street, Boston.]

STEIN DOUBLE CUSHION TIRE.

THIS tire, originally introduced for use on bicycles, under a patent issued in 1892, has been modified of late to adapt it for

use on automobiles, patents now pending on the new features. The tire cushions at four places—near the center, at the bottom arch, and at the two lower corners—thereby providing for proper displacement, and thus preventing tendency to creep. It is referred to as very resilient, and very difficult to cut out, even over the roughest roads. The cut herewith shows "Style A." In "Style B" of the same tire the cushion hole near the center is omitted, but the tire is resilient, comfortable riding, durable, and light in weight. The manufacturers announce that they are about ready to supply these tires up to 4 inches in size, and in a letter to THE INDIA RUBBER WORLD they state: "Our tires are manufactured by one of your largest advertisers." [The Stein Double Cushion Tire Co., Meadville, Pa.]

STANDARD RUBBER VEHICLE TIRE.

In this tire only two pieces, steel rim and rubber, are used, fitting each other and interlocking so firmly that no additional mechanical fastening device is needed. The rims are of the clincher pattern, made in two classes, to suit different requirements. No. 1, or the "primary rim," is intended for new work, and is furnished to carriage builders, ready for welding. No. 2, or the "auxiliary rim," is designed to be attached to finished vehicles, old or new, without removing the steel tires already on the wheels. The rubber tire is duplex in construction. It comprises a base of hard rubber and frictioned duck, having projecting edges or lips and a tread portion or wearing surface of soft stock, the whole being finally united by vulcanization under heavy pressure. The idea is to make the base so tough and strong that, once sprung under the curved edges of the rim, it will, without the aid of cement, remain seated in spite of any strain. Moreover, the power of the tire to resist abrasion, and its wearing qualities in general, are increased by the original method of compressing the tread covered by patents controlled by the manufacturers. [Indiana Rubber and Insulated Wire Co., Jonesboro, Indiana.]

"VICTOR" BICYCLES AND TIRES.

THE J. Stevens Arms and Tool Co. (Chicopee Falls, Mass.) have decided to take up the manufacture of the "Victor" bicycle, controlled formerly by the Overman Wheel Co., of the same town, and now in liquidation. The "Victor" tire plant which formed part of the Overman establishment has been purchased by the Stevens company, though the latter do not intend, for the present at least, to manufacture tires, either for "Victor" wheels or for the trade.

RUBBER EXHIBITS AT CINCINNATI.

THE rubber trade was well represented at the Tri-State Carriage Dealers' Convention, held in Cincinnati, November 19-24. Tires were shown by the Indiana Rubber and Insulated Wire Co., The Hartford Rubber Works Co., Morgan & Wright, The Victor Rubber Co., The Goodyear Tire and Rubber Co., New York Belting and Packing Co., Diamond Rubber Co., and the International Automobile and Vehicle Tire Co. Besides, mats, pads, etc., were exhibited by the Victor company; horse covers, aprons, lap robes, etc., by the Cleveland Rubber Co., rubber step pads by the Rubber Step Manufacturing Co., and rubber mats and a new vulcanizer by the Hartford Rubber Works Co.

SUCCESS OF RUBBER DEEP SEA CABLES.

THE chief signal officer of the United States army, General A. W. Greely, in his official report for the last fiscal year, mentions some facts of no slight interest as bearing upon the use of India-rubber insulation for deep sea cables. The cable steamer *Hooker*, which sailed from New York on May 1, 1899, having on board 212 miles of rubber insulated submarine

cable, of American manufacture, to connect our military posts in the Philippines, was shipwrecked on a reef of Corregidor island, near Manila. The ship was a total loss, but the cable laying machinery and equipment were recovered, and also much of the cable, which had been thrown overboard, in the first attempts to save the ship.

"Much of the cable," says the report, "was in very bad shape, necessitating a large amount of work for its recovery and proper repair by splicing. When recovered, in October and November, 1899, facilities for laying the cable were lacking, and it was not until April, 1900, that Colonel Allen was afforded means for laying the cable. Indeed, experts in Manila believed that the exposure, after its recovery, of the cable to the intense heat of the climate had made it unfit for use. Colonel Allen says: 'Portions of the cable were strained by the handling received during recovery, and the insulation resistance lowered from exposure, but all of it had been working satisfactorily since its submersion.'"

Altogether, 149 miles of recovered cable were laid. "The vicissitudes to which it had been subjected, especially its numerous splices, made the work of laying this cable most difficult, and it was necessary to pick up cable already laid, cut out the damaged portions, and make new splicings on no less than three occasions." All of this having been completed, in May, 1900, "these cables have continued constantly in good working order, and have been of incalculable value in military administration."

General Greely's report continues: "The cable experiences of the signal corps, both in Cuba and the Philippines, bears testimony to the efficiency of American cables, especially for war purposes, wherein are involved rough work, severe treatment, and at times inadequate facilities for the care of the cables. On this point Colonel Allen says:

"The sterling properties of this type of cable, both electrical and mechanical, reflect extraordinary credit upon the American manufacturer, and, taken in connection with the history of similar cable laid during the Spanish war, would seem to settle conclusively that for military purposes cable with a properly constructed rubber insulation is the best type that can at present be designed. Had this cable been insulated with Gutta-percha, twenty-four hours of exposure would have rendered it entirely worthless."

SOME WANTS OF THE RUBBER TRADE.

[148] A RUBBER manufacturer writes: "We want to get what we have heard referred to as Utah and Texas asphalt, but are unable to find it on the market. Where can it be obtained?"

[149] From a new mechanical rubber concern: "Can you give us the names of manufacturers who sell white cotton hose jacket to the trade, to be used in making cotton hose?"

[150] A subscriber writes: "Will you kindly advise me who will buy old rubber wringer rolls with the inside irons only? Also advise who has a machine for cutting the rubber from old wringers."

[151] A manufacturer writes to ask where he can purchase flock.

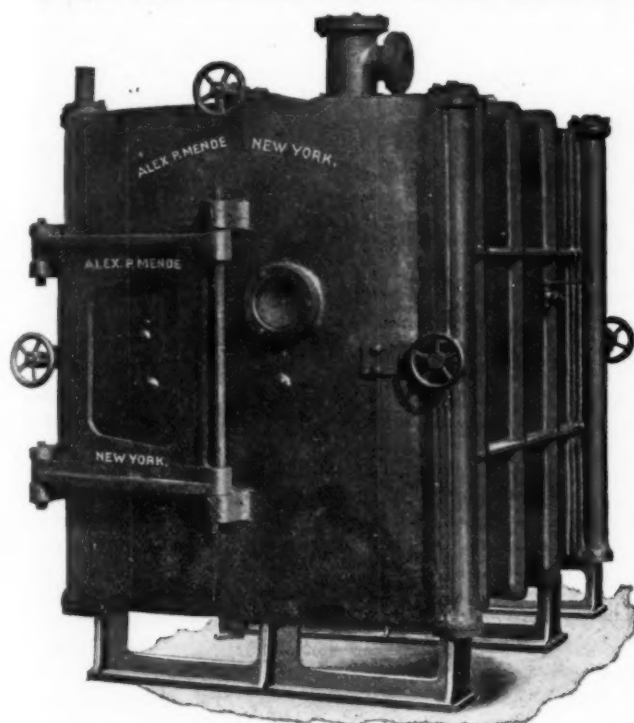
ANSWERS.

[142] The Incandescent Light Manipulator Co., No. 116 Bedford street, Boston, write that they can supply such a vulcanizer as was inquired for.

THE New York Belting and Packing Co., Limited, have completely closed their factories at Sandy Hook, Conn., concentrating all their work at Passaic, N. J.

VACUUM DRYERS FOR CRUDE RUBBER.

IT is very evident that the vacuum dryer for crude rubber has come to stay, and it is a little remarkable that European India-rubber manufacturers appreciated its value first. Up to this time nearly forty of the leading English and Continental rubber manufacturers have installed this system of drying, and when the names of such concerns as The Russian-American India Rubber Co., The Silvertown Rubber Works, Pirelli & Co., and the Harburg India-Rubber Comb Co., are published as having adopted the system, and given repeat orders for the dryers, it is proof positive that the system is no experiment, but is of practical value. The vacuum dryer here illustrated is con-



structed by Alex. P. Mende, No. 536 West Fourteenth street, New York, who has long been a successful builder of dryers for a great variety of purposes. His system is practically the same as that used in the European rubber mills with one or two improvements that make the dryer more compact and economical. There is hardly space at this time to describe all of the advantages of this system over the drying rooms that are ordinarily installed in American rubber factories. There is, however, a definite saving in space, in time of drying, in labor, and in the delivering of a better quality of rubber, as there is no oxidation during the drying. The drying chamber can easily be heated with exhaust steam, and one man can handle it and its contents without trouble.

RUBBER SHOE TRADE IN GERMANY.

TO THE EDITOR OF THE INDIA RUBBER WORLD: In regard to an article printed in your issue of December 1, headed "Rubber Shoe Imports into Germany," I should say that your calculations are about right, except as to the weight of the goods. The average of American footwear brought into this country is less than one pound per pair. Further, there are not

40 brands of rubber footwear imported here from the United States. They have been "Boston," "Bay State," "Candee," and "Federal," with a few cases of "American," "Woonsocket," "Goodyear," and "Goodyear Glove,"*

As I understand it, the government commission now at work on a new tariff schedule decided to propose an increase in the duty on rubber footwear from 60 to 120 marks per 100 kilograms in weight. The commission has been asked to make the rate 220 marks. It is hardly correct to say that the German industry in this branch is suffering from foreign competition by reason of a low rate of import duties. The leading manufacturers—the Vereinigte Gummiwaaren Fabriken, Harburg-Wein—cannot make enough rubber shoes to supply their demands. They find it difficult to increase their production on account of the lack of labor in their various departments. They make everything in the way of rubber goods, and have to transfer their employes from one department to another, as the pressure of work is heavier in this or that.

Another factory has failed to increase its trade in rubber footwear because, on account of not having modern equipment, they are not prepared to produce goods of the finer qualities which the trade now demands. Another concern took on the making of shoes not long since but with the result, it is reported, of having sunk a considerable part of their capital. And yet, in the face of such facts, the Centralvereins Deutscher Kautschukwaren-Fabriken seeks to justify an increased duty to protect the German rubber shoe industry!

The rubber shoe trade is pretty fair this season. On account of the exceptional shoe weather of last winter stocks were cleared out, and orders have come in pretty freely. A. G. L.

Hamburg, Germany, December 15, 1900.

THE official returns of imports and exports of rubber boots and shoes into and from the German empire for the first nine months are as follows, the figures denoting weights in kilograms:

COUNTRIES.	Imports.	Exports.
Great Britain	26,300	116,200
Austria Hungary.....	30,800	.....
Russia.....	391,200	.....
United States.....	35,400	.....
Belgium.....	.....	10,400
France.....	.....	15,800
Netherlands.....	.....	10,400
Switzerland.....	.....	6,400
Other lands.....	12,200	53,900
Total.....	495,900	213,100

The value of imports was 3,273,000 marks (= \$778,974) and the value of exports 1,279,000 marks (= \$304,402).

* The mention of forty brands in the article published in our last issue had reference to the designation of styles, such as "Men's Short Pebbled Boots," "Men's Beacon Gaiters," "Women's Fairy Croquets," etc.—THE EDITOR.

THE National Industrial Co., with \$3,000,000 capital, have been organized at Milwaukee, Wisconsin, to engage in the development of the resources of Nicaragua and Honduras. The company advise THE INDIA RUBBER WORLD that their principal business will be transportation, and that their "direct interest in rubber will therefore be more in the carrying of it to the sea coast for shipment than in its cultivation." The president of the company, however—Edward W. Perry—is also president of the Nicaragua Rubber and Agricultural Co., of Philadelphia, who do intend engaging in rubber culture.

INDIA-RUBBER was one of the items in a list of stationery advertised for sale, in 1804, in the book store of G. & R. White, Nos. 38 and 64 Maiden lane, New York.

NEWS OF THE AMERICAN RUBBER TRADE.

INTERNATIONAL CRUDE RUBBER CO.

ARTICLES of incorporation of a company with the above name, to buy crude India-rubber and to sell it to rubber manufacturers, and to establish or acquire and control rubber plantations, was filed on December 24 in the office of the secretary of state at Trenton, New Jersey. The amount of capital authorized is \$30,000,000, of which \$10,000,000 is to be in 6 per cent. cumulative preferred shares, and \$20,000,000 common stock. The incorporators were H. M. Sadler, George Pope, George F. Brown, William A. Towner, Camillus A. Kidder, J. F. Charlton, E. H. Warren, C. G. Palmer, and Alden S. Swan. The registered offices are in Jersey City. The list of directors announced comprises:

Charles R. Flint, treasurer of the United States Rubber Co. and chairman of the board of the Rubber Goods Manufacturing Co.; director in Flint Eddy and American Trading Co.

Henry H. Rogers and *John D. Archbold*, directors in the Standard Oil Co.

Albert C. Burrage, president of the Amalgamated Copper Co. of Boston.

Adelbert H. Alden, treasurer of the New York Commercial Co., importers of crude rubber; head of the house of A. H. Alden, in Pará, Brazil; treasurer of the International Automobile and Vehicle Tire Co.

Samuel P. Colt, president of the National India Rubber Co., the Woonsocket Rubber Co., and the Industrial Trust Co., of Providence, R. I., and director and secretary of the United States Rubber Co.

Lester Leland, treasurer and general manager of the Boston Rubber Shoe Co., and director in the United States Rubber Co.

T. Jefferson Coolidge, president of the Old Colony Trust Co., of Boston.

One of the directors of the new company assures THE INDIA RUBBER WORLD that the business of the new company is to buy and sell rubber, and that its policy will not be such as to narrow the market for rubber by making it more difficult for manufacturers to obtain rubber. In other words, the new company will not attempt to raise the prices of rubber, but to lower them, and also to make prices more stable, and thus relieve the market of the tendency to constant fluctuation which has often been worse for the manufacturers than high prices. The director interviewed thought that the policy of the company would be to gain control of large rubber producing areas in South America. When asked what would be the position of those manufacturers who are not allied with the United States Rubber Co. and the Rubber Goods Manufacturing Co., with regard to buying rubber through the new corporation—whose directorate is largely made up of members of these two companies—he said that the fact of their being "on the outside" would not make a change in the treatment accorded to them as buyers of rubber. From another source comes the suggestion that the International Crude Rubber Co. will seek to profit by means of financing its large transactions in the Brazilian product directly, instead of through foreign banks, as in the past. A field exists also for shipping facilities by means of which the company may pocket some part of the profits which now go to foreign steamship companies.

A MONTH PROLIFIC OF RUMORS.

GOSSIP has been busy during the past month with the situation in the rubber shoe trade, based upon the lack of weather, thus far in the winter, to encourage buying on the part of consumers. Following the regular December meeting of the board of the United States Rubber Co. the financial newspapers an-

nounced that the quarterly dividend had been passed, but January and not December is the month for declaring dividends. As for dividends on the common stock, of which four, of 1 per cent. each were declared out of the earnings of the last business year, it was practically announced as long ago as July that there would be none this year. Another report that followed the December meeting was to the effect that a heavy cut in prices would be made. Some newspapers stated definitely that a cut of 25 per cent. had been decided upon at the meeting—something which the trade regarded as very improbable in view of the fact that the United States company's prices are guaranteed, and that a cut at this time of 25 per cent. would involve a rebate to this extent on all orders filled since April 1 last. The condition is one which is regarded with much interest, however, for the reason that many goods have been made, including the large combined output of the independent companies, and that all these goods cannot wait indefinitely before finding a market at some price. It now appears probable, however, that at the monthly meeting of directors of the United States Rubber Co. on January 3 a cut will be announced. A circular has been issued to jobbers, to ascertain the amount of their stocks, in order that an estimate may be made of the amount necessary to be paid in rebates, in the event of a cut being made. Regarding the rumors of a further consolidation in the rubber footwear trade, it may be stated that a meeting was held in New York during the month of representatives of several companies not embraced in the United States Rubber Co. but that no result followed the negotiations then begun. Meanwhile rumors began to include a reference to a "pool" which, it turns out, is the International Crude Rubber Co., without any relation to the combination of rubber shoe concerns which was attempted. It is now definitely announced that another meeting will be held in New York on January 3, with a view to attempting the organization of the Standard Rubber Shoe Co., with \$5,000,000 capital. At one time during the month the trading in United States Rubber was quite heavy, and at declining prices, evidently showing a feeling that no hope existed of common stock earning any dividends this year.

APSLEY RUBBER CO. (HUDSON, MASS.).

THIS successful concern has just completed a four story brick addition to their main boot and shoe building, and are to-day making a mixed ticket daily of 5700 pairs, or, as many shoe men reckon the output of shoes, it is equal to 9000 pairs a day. It is interesting to note that none of these goods are going into stock, all of them being shipped out on orders. Selling Agent W. B. Loughton is still in the west, and evidently is doing great work.

The Apsley company issued a circular dated December 24 in which reference is made to "certain interests in the rubber boot and shoe business" as having "disturbed the normal condition of this business, creating doubt and uncertainty in the minds of manufacturers, jobbers, and retailers." In consequence the company state that they are outlining a policy for 1901, to be submitted within a few days, for which they invite the consideration of the trade.

BOSTON BELTING CO.

A QUARTERLY dividend of \$2 per share has been declared, payable January 1, to stockholders of record at the close of business on December 15, this being regular dividend No. 125.

MISHAWAKA WOOLEN MANUFACTURING CO.

A PRESS despatch dated December 25 reports that an offer has again been received by this company from the United States Rubber Co. looking to the purchase of the Mishawaka plant, which has become an important producer of rubber overs as well as of felt boots. It is announced, however, that the offer has been declined. This is the third time, within as many years, that such news has been published. This is the company with which Emmett A. Saunders, sometime general superintendent of the United States Rubber Co.'s factories, is connected, as a stockholder and manager of the rubber department.

WEBBING FACTORY FOR SALE.

GROVE J. TUTTLE, New Haven, Conn., trustee of the estate of the elastic web manufacturing firm of J. H. Buckley & Son (Norwalk, Conn.), will offer the land, factory building, and equipment at public sale on the premises at noon, January 3. The property was placed under attachment in April last in a suit of the Easthampton Rubber Thread Co., after which the Messrs. Buckley filed a petition in bankruptcy. Mr. Tuttle was appointed trustee at a meeting of creditors.

HARTFORD DOUBLE TUBE TIRES.

As a result of acquiring the tire business of the Mechanical Fabric Co., including patents, the Hartford Rubber Works Co. (Hartford, Conn.) are now in a position to supply double tube cycle tires of their own. In addition to their standard "Hartford" tires, therefore, which are of the single tube variety, the company offer this year the "Hartford Flexifort" tire, which is the double tube tire marketed for years by the Mechanical Fabric Co. The Hartford Rubber Works Co. also market exclusively the New Brunswick Tire Co.'s "Raritan" and "Monitor" cycle tires, and the "India" unguaranteed tires, which are made by the India Rubber Co. (Akron, Ohio.)

SINGER MANUFACTURING CO.

THE stockholders of the Singer Manufacturing Co. at Elizabeth, N. J., voted on December 17 to increase the capital stock from \$10,000,000 to \$30,000,000 and distribute the 200 per cent. of new stock to present holders. Sales of stock were made on the same date at 725. The company were originally capitalized at \$1,000,000. Their output last year was 1,000,000 sewing machines, which will, it is expected, be greatly increased this year. The Singer company, by the way, are the leading manufacturers of sewing machines suited for use in various branches of the rubber industry.

THE CELLULOID CO.

A QUARTERLY dividend of $1\frac{1}{4}$ per cent. and an extra dividend of 1 per cent. was paid December 31 by the Celluloid Co. These dividends make a total of 7 per cent. for 1900, comparing with 6 per cent. in 1899, 5 per cent. in 1898 and 4 per cent. from 1894 to 1897. In 1893 the company paid $5\frac{1}{2}$ per cent. and in 1892 6 per cent. The capital is \$6,000,000, nearly all of which is outstanding.

MATTSON RUBBER CO.'S FIRE.

FIRE on the night of December 8 practically destroyed the three story brick building, Nos. 239-243 Greenwich street, New York. The ground floor of No. 241 was occupied by the Mattson Rubber Co. as a druggists' sundries store, the same firm occupying space above for stock rooms and also for part of their manufacturing. Everything at this number was a total loss, except in so far as it was insured. The Mattson company, however, also occupy the building No. 26 West Broadway, the rear of which is separated by a narrow area from the rear of the burned building, and this was not at all damaged. At the latter number, therefore, the company

will concentrate all the departments of their business until the Greenwich street structure can be rebuilt, when they will reopen their old store.—The Straus Rubber and Tire Co. were also located in the Greenwich street building, and since the fire have occupied temporary offices at No. 127 Duane street.

GEORGE S. ANDRUS.

THE subject of this sketch, of whom an excellent likeness is here presented, was born in Edwardsburg, Michigan, in 1865. After a common school education he followed the example of many other western boys and became a clerk in a general store. After a year of this work his parents, fearing for his health, sent him to the Indian Territory, where, astride of a pony, he put in twelve months as a cow puncher. This proved to be the best possible medicine, and doubtless laid the foundation for the unusually robust health which Mr. Andrus now enjoys. Shortly after his return to the home of his parents, he went to Racine, Wisconsin, and got employment in the factory of the Chicago Rubber Clothing Co. He remained here for about ten

years, attaining the position of superintendent. Of a singularly inventive turn of mind, Mr. Andrus was able to suggest many improvements in his line of work, and, in addition, he invented and patented many novelties, some of which were quite remunerative. In 1897 he left the Racine concern and interested capitalists in La



Crosse, Wisconsin, where he purchased the plant of the National Cooperage Co., organized the La Crosse Rubber Mills Co., and began the manufacture of mackintosh clothing. His own capital in this came from a puncture fluid called "Cyclo" which he invented and manufactured, which had very large sales, and which he put into the La Crosse concern. He started his factory with 15 hands. To-day he employs 250, and it is not too high praise to say that the success of the La Crosse mills is due wholly to his efforts. Mr. Andrus is an excellent type of the western "Yankee." He is a keen thinker in his line of work, a shrewd buyer, an excellent organizer, and a man of tireless industry. The amount of work that he does personally in his business is almost marvelous, and with it all he is ever in good humor and an inveterate and original joker.

NEW YORK CYCLE SHOW.

THE sixth annual exhibition of cycles, motor cycles, automobiles, and accessories will be held at Madison Square Garden on January 12-19. Already several of the leading rubber tire manufacturing concerns have applied for space. Particulars are to be had from Frank W. Sanger, manager, Madison Square Garden.

STANDARD RUBBER CORPORATION ASSIGNS.

THE Standard Rubber Corporation (Brockton, Mass.) has made an assignment, for the benefit of the creditors, to Robert B. Baird, of Boston. It is estimated by some of the parties interested that the creditors will receive 50 per cent. on their claims.

THE NEW FACTORY AT MILLTOWN.

THE completed plant of the Milltown India Rubber Co. (Milltown, N. J.) is situated on the same stream that furnished water for the Meyer Rubber Co., but on the opposite side of it. An advantage that the latter factory did not enjoy, however, is the railroad connection, the Milltown factory having two spur tracks in their yards and also the electric railway which brings help from a number of adjoining towns, including New Brunswick. The Milltown factory is modern in every respect, is built of brick, three stories in height, and equipped with sprinklers, fire pumps, and all of the latest paraphernalia that insurance companies desire. The power is supplied by a 400 horse power Fishkill-Corliss engine (non condensing) and three 100 h. p. National Water Tube Boilers. The rubber machinery consists of one washer, two mixers, one cracker, one refiner, four warmers, one rag mill, one four roll sheet, one three roll, one friction, one soling, and one upper calender, all of the latest type, built by the Farrel Foundry and Machine Co. At present the company are turning out 2500 pairs a day all on orders. The officers of the company are John C. Evans, president; Matthew Suydam, treasurer; and Edward H. Radell, vice president. The new company have issued the following circular:

TO THE RUBBER BOOT AND SHOE TRADE: We do not have to cheapen our goods to pay large salaries, or to pay dividends either on watered stock representing promoters fees, goodwill, patents, trade-marks or the like, idle, closed, or broken down mills or those out of existence, or do we have to have a force or an army of men to look after the latter, pay out for repairs as well as taxes, insurance, and coal to heat said buildings or plants, to say nothing about interest on investment in same. Our capital represents money actually paid in, 100 cents on every dollar, nothing for as above, which is why with a modern mill, appliances, up-to-date location to the nearness of the rubber supply, markets, and experienced help, we can manufacture superior or high grade goods for as little money, if not less than a "trust." The Milltown India Rubber Co. goods will have all the good wearing qualities, fit and style and be better than those the Meyer Rubber Co. had before being submerged in the United States Rubber Co. prior to 1893. Trusting said qualifications will warrant or merit the public in buying them, we remain most respectfully,

MILLTOWN INDIA RUBBER CO.

Per JOHN C. EVANS, President and General Manager.

Formerly manager, secretary, general superintendent, and a director of the Meyer Rubber Co.

THE UNION SUPPLY CO. (TOLEDO, OHIO.)

THIS company has lately been incorporated, under Ohio laws, embracing the jobbing firm of J. G. Swindeman & Co. and the Toledo Cycle Supply Co. J. G. Swindeman is president and general manager; John V. Mayhew secretary and treasurer; and C. M. Hall vice president. The bicycle, automobile, cycle sundries, and fittings business of the old firms will be continued, as in the past, both in a retail and jobbing

way. The new lines will consist of mechanical rubber goods, rubber clothing, footwear, and druggists' and surgical sundries. They will make quite an effort in the mechanical line, employing two expert men on the road, and a practical rubber man to look after the inside business. They will not job footwear and clothing until after the beginning of another season. The druggists' goods they expect to push along with the mechanical line, and as soon as their stock can be arranged they will go after the jobbing trade in a large way.

F. N. WOODWARD & CO., A NEW FIRM.

THE rubber factory at West Watertown, Mass., conducted at one time by the Rand-Wayne Co., later by the Watertown Rubber Co., and for some time idle, has been taken by a new firm, named above, consisting of Frederick N. Woodward and J. Henry Baird, the arrangement dating from December 1. They will manufacture an extensive line of rubber specialties. Mr. Woodward was the first superintendent of the Newton Rubber Co., organized at Newton Upper Falls, Mass., some twelve years ago, and has remained at that factory through the changes of management, first as the Newton Rubber Works and later as one of the factories of the International Automobile and Vehicle Tire Co. Mr. Baird is a brother of William

T. Baird, treasurer of the New York Belting and Packing Co. and of Robert B. Baird, of the crude rubber trade in Boston. He will give particular attention to the mechanical working of the plant while Mr. Woodward, of course, will have charge of the work in rubber.

Mr. Woodward, on taking leave of the factory at Newton Upper

Falls, was presented by the employees there with a handsome oak roll top desk. Mr. Woodward has a son who will be associated with him in the new enterprise.

CABLE RUBBER CO.—REMOVAL.

THE above named company announce their removal to new quarters, Nos. 70-72 Essex street, Boston, where they will carry a complete line of Cable rubber surface clothing and carriage cloths; also a complete assortment of the Hodgman Rubber Co.'s mackintoshes and rubber sundries. The new store is easily the best rubber store in New England. The approach to the store, the great show windows and the broad counters for the display of mackintoshes and rubber surface clothing, together with the arrangement of the sundries department leave nothing to be desired from a selling point of view. For shipping there is a roomy, light basement fitted with all modern conveniences. The offices and bookkeeping departments are in the rear of the main store and are elegantly fitted. The Cables are to be congratulated on this new and wise move.

GROTON RUBBER CO.

THIS is the name of a new corporation formed to manufacture rubber sheeting, carriage drills, piano and billiard table covers, and electric tape, at Pequonnock, near Groton, Conn.



FRONT VIEW OF FACTORY OF THE MILLTOWN INDIA RUBBER CO.

GOLDEN WEDDING OF MR. AND MRS. SPADONE.

MR. AND MRS. AMEDEE SPADONE, of New York, celebrated the fiftieth anniversary of their wedding on the evening of December 3, at their residence, No. 270 West End avenue, with a dinner to which had been invited only members of the family and the more immediate relatives—a party of sixteen in all. Their four living children were present, two daughters in law, and four grandchildren. A sister of Mr. Spadone and a sister of Mrs. Spadone were present, being the only surviving witnesses of the wedding fifty years ago, with the exception of Mrs. Spadone's mother, who lives in Camden, N. J. No other celebration of the anniversary had been intended, and it was not known that any knowledge of the event had gone beyond the family, but while the dinner was in progress a package arrived at the house from the jewelry firm of Tiffany & Co., containing a gold set—coffee urn, sugar bowl, and cream jug—engraved with the initials of Mr. and Mrs. Spadone, and the dates 1850 and 1900, and accompanied by a card stating that the present came from all the employes of the company's store at No. 126 Duane street.

A second surprise came to hand on the evening of December 22, when three carriages arrived at the house containing a committee of the employes at the factory in Brooklyn, bringing a present of a massive and artistic bronze vase, with gilt side pieces, the vase bearing a golden tablet inscribed—

Mr. and Mrs. A. Spadone
on their Golden Wedding Day
from all the employes at Brooklyn
1850-1900

A presentation speech was made by Mr. Collins, of the committee, who also handed to Mr. Spadone a handsome album in which had been engrossed a series of resolutions, framed by the committee, which had been appointed at a meeting of the employes in the factory at the end of the day on December 3, Mr. Spadone making a fitting response in behalf of himself and his wife. Every member of the large factory force had contributed to the cost of the present, which was a substantial recognition of the pleasant relations so long existing between the Gutta Percha and Rubber Manufacturing Co. and all who have been in their service. The list of employes who have had a long connection with the company is an extensive one, headed by Mr. John Murphy, the factory superintendent, who began with the company in 1858. The resolutions were:

WHEREAS, We, the Brooklyn employes of The Gutta-Percha and Rubber Manufacturing Company, desiring to express our appreciation of the pleasant relations existing between Mr. A. Spadone, President of the Company, and ourselves; and

WHEREAS, This being the fiftieth anniversary of Mr. and Mrs. Amedee Spadone's marriage; be it therefore

Resolved, That we desire to express to them our heartfelt congratulations and best wishes for their continued health and happiness.

Resolved, That during the years we have been in your employ we have been treated with the greatest courtesy at all times, and that your cheerful presence in the factory has inspired us to our very best efforts in your behalf.

(Signed,)

JOHN MURPHY,
Superintendent.
TERENCE J. MORRIS,
Assistant Superintendent.
ANDREW C. BOLTON,
JOHN KELLY,
JAMES JONES,
A. M. COLLINS,
Committee.

Amedee Spadone and Elizabeth Ann Angel were married in the Baptist church at Camden, N. J. Mr. Angel, the bride's father, had built a row of four houses, in one of which he lived himself, and the second house from this had been sold to Mr. Spadone's father, upon the arrival of the latter from Italy. It was under such conditions of neighborliness that an opportunity existed for a beginning of the attachment between the two young people which has resulted so fortunately and so happily.

Mr. Spadone, having already laid the beginnings of a successful business career, in 1862 signed the application for a charter, under the laws of New York, for the Gutta Percha and Rubber Manufacturing Co., which succeeded to the business of the North American Rubber Co., formed in 1855. Mr. Spadone was

elected to a seat in the original board, and has since remained a director. In 1872 he was elected president of the board, with a salary, on the stipulation that he should devote two hours daily to the affairs of the company. In 1878 he decided to devote his whole time to the company, since which date he has been, as he is to-day, the active, forceful, and successful head of its management. The company under his leadership has had a record of continual and substantial growth. The original capital of \$200,000 has been increased, by successive steps, to the present figure of \$1,000,000. The operations of the company have increased on a commensurate scale, besides which it has enjoyed a most desirable reputation in the trade. Personally Mr. Spadone's position in the rubber business has been such as to make his judgment and counsel desired and valued by many of his contemporaries, and it has tended often to harmonious relations and the betterment of trade condi-



AMEDEE SPADONE,
President of the Gutta-Percha and Rubber Manufacturing Co.

tions, generally.

CALENDARS.

THE first calendar to reach us from the rubber trade for the new year was a very handsome one from the Hodgman Rubber Co. (New York), consisting of six lithographs 10×13 inches, each containing a calendar for two months, and also a picture in colors, depicting an outdoor scene appropriate to the season, and particularly appropriate to the business of the company referred to, on account of the attention which they devote to the sporting goods trade.

—The 1901 Columbia desk calendar, a desirable addition to the business man's desk, will be sent to any address by the American Bicycle Co., Columbia Sales Department, Hartford, Conn.

—The Franklin Rubber Co. (Boston) have sent to their customers a convenient pocket calendar for 1901, enclosed in a handsome illuminated cover.

DIAMOND RUBBER CO. IN NEW YORK.

THERE is about to be incorporated, under the laws of New York, the Diamond Belting and Packing Co., which will act as general selling agents in the Eastern states for the Diamond Rubber Co. (Akron, Ohio). The new company will occupy the building No. 15 Warren street, New York, which has just been fitted up for this purpose. The officers of the new company are: William B. Miller, president; John W. Teller, vice president; Earnest L. Baldwin (late with the Empire Rubber Manufacturing Co.), secretary and treasurer. The Diamond company will maintain a tire department in Boston, which will be supplied through the new New York establishment.

LAYING AN AMERICAN CABLE.

THE United States cable ship *Burnside* was reported lately to be at Manila, expecting before the end of December to begin laying the cable manufactured by the Safety Insulated Wire and Cable Co. (New York), mentioned already in THE INDIA RUBBER WORLD. The new line will connect the islands of Negros, Mindanao, and Jolo. Negros and Cebu already have able connections with Iloilo and Manila.

FAULTLESS RUBBER CO. (AKRON, OHIO.)

THE company lately incorporated under the above name is a reorganization of the Faultless Manufacturing Co., of Akron, with an increase of capital to \$150,000. They have just completed their removal into larger quarters—the factory plant of the Standard Silver Plating Co., acquired at a cost reported at \$20,000. The latter company, by the way, retire from business. Rubber machinery has been installed in the building for a greater variety of products than has been made by the Faultless company hitherto, and it has been their intention to get started by the present date.

"CAUGHT IN THE SHOWER."

THIS is the title of a bright bit of artistic color work—a panel 41 × 15 inches—in which a pretty girl under a dainty parasol, to say nothing of a dainty hat, is portrayed as being driven to seek shelter under a tree by a sudden shower. The whole picture is very effective, nor is its attractiveness spoiled by the fact that on the trunk of the tree a placard appears, offering the suggestion "Wear Meyer Rubbers."

RUBBER GOODS MANUFACTURING CO.

THE directors at a regular meeting in New York on December 4, declared the seventh regular quarterly dividend of 1¼ per cent. on the preferred shares, payable December 15, and the third regular quarterly dividend of 1 per cent. on the common shares, payable January 15 to holders of record January 5.

NEW INCORPORATIONS.

THE Hydro Carbon Rubber Co., December 13, in the circuit court at Richmond, Virginia, to handle rubbers, hydro-carbons, gums, ozocerite, and waxes; capital, \$1,000,000, with authority to increase to \$5,000,000. The officers are: Sumner H. Doulton, a lawyer, at No. 66 Broadway, New York, president; Philo P. Safford, a lawyer, at No. 141 Broadway, New York, and residing at New Rochelle, N. Y., vice president; Linbomir R. Mestaniz, New York, secretary and treasurer. The remaining directors are J. Kent Rawley, Marvin J. Taylor, S. J. Doswell, and A. B. Gington, of Richmond, Va. The company's plant, it is said, will be in New York city.

=Armour Manufacturing Co. (Thomaston, Conn.), under Connecticut laws, to make and deal in surgical instruments of rubber and metal; capital, \$2000. Subscribers: William A. Armour, George D. Ferguson, Thomas D. Bradstreet, George P. Bradstreet, Albert P. Bradstreet.

=The Vehicle Rubber Tire Machine Co. (Indianapolis, Ind.) November 30; capital, \$8000. Directors: Charles M. Cooner, Calvin F. Darnell, Augusta Schmidt, John R. Duncan, Alfred R. Hovey.

=International Coffee and Rubber Co. (Chicago), December 19, under Illinois laws, to develop and operate plantations in Mexico. Reorganization of the Mexican Central Gold Mining Co. Capital reduced from \$3,000,000 to \$500,000.

=Akron Rubber Specialty Co., December 17, under Ohio laws, to manufacture rubber specialties; capital, \$100,000. Incorporators: John E. Frank, Jonathan Taylor, Jr., Frank Ream, William Griswold, and Isaac H. Lambach. They have purchased from the American Cereal Co. the Schumacher Milling Co. property in Akron—a four story brick building—and equipped it with machinery, with a view to operating by the beginning of the new year. M. J. Gilbo, general manager of the Akron Machine Co., will be interested in the new company to an important extent.

=The Manhattan Rubber Manufacturing Co., December 21, under New York laws; capital, \$10,000. Directors: F. C. Jones, A. F. Townsend, and E. M. Henderson, all of New York. To cover certain business in this state of The Manhattan Rubber Manufacturing Co. of New Jersey.

TRADE NEWS AND PERSONAL NOTES.

THE new plant of the insulated wire department of John A. Roebling Sons & Co. (Trenton, N. J.), will cover some 2½ acres of floor space.

=In connection with the voluntary assignment of the Standard Rubber Co., Brockton, Mass., it is gratifying to note the cordial sympathy that both trade and creditors extend to manager B. F. Pennington. The universal feeling is that the trouble came from trade conditions and ill health, and was in no way due to lack of effort on his part.

=Samuel F. Randolph, Jr., will have charge of the new store in Philadelphia of the Diamond Rubber Co. (Akron, Ohio.) The store will be finely equipped with general mechanical goods and automobile tires, and will have in connection a repair department for these tires.

=There was a general shutting down of the rubber shoe factories at the close of business on Saturday, December 22, work being stopped until after the holidays. The limit of the shut-down announced varied from one to two weeks.

=Lachlan McKellar, of Toronto, Ontario, head of the wholesale boot and shoe firm of McKellar & Dallas, and vice president of the Maple Leaf Rubber Co., died at his home on December 15, aged 49 years, survived by a widow and six children.

=Colonel Theodore A. Dodge, president of the Single Tube Automobile and Bicycle Tire Co., is convalescing from a serious and protracted attack of pneumonia.

=J. E. Spencer, who has been connected with the Cleveland works of the Mechanical Rubber Co. for several years, has been appointed to fill the position of manager of the clothing department, to succeed L. F. Lindley, whose resignation to become connected with the Raven Mining Co. (Chicago) has been mentioned in THE INDIA RUBBER WORLD.

=The Brockton Rubber Scrap Co. (Brockton, Mass.) is the new firm name adopted for the business in rubber waste carried on in the past by M. J. Herman & Son. The junior member of the firm has retired, to go into the ladies' cloak trade, but M. J. Herman will remain at the head of the business referred to.

=“Eureka” rubber, manufactured by the Philadelphia Rubber Works, is showing increasingly large sales all the time, proving that it profits a firm to make a high grade of goods.

=Mr. Charles E. Longden, superintendent of the Seamless Rubber Co. (New Haven, Conn.) for the past twenty-five years, and secretary of the corporation for three years, has retired.

=C. W. Sloane, who is now general manager of the Manufactured Rubber Co. (Philadelphia), has been putting in a deal of hard work in making up samples of goods, particularly in the mechanical line, for which the products of his company seem best adapted. The company has also purchased the plant of the Metuchen Manufacturing Co., of Metuchen, N. J., and will move there from Camden very shortly. They will then manufacture not only their standard product known as Manufactured Rubber, but will also turn out high grades of both black and white rubber substitutes.

=The United and Globe Rubber Manufacturing Cos. (Trenton, N. J.) are doing an exceedingly large business in the manufacture of air brake hose. For this particular branch they have put in special equipment, and with their large output they have now got the business down to a science.

=The sales of "Rainbow" packing for 1900 exceeded the sale of any previous year by at least 100 tons—a marvellous showing.

=K. B. Thompson, on whose shoulders falls the management of the Fossil Flour Co. (New York), has gone to the works at Nova Scotia to make arrangements for next season's working of the deposits. The steady growth of the sales of Fossil Flour in the rubber trade will demand that the works be run night and day next season.

=Mr. Ernest C. Auer, formerly assistant secretary of the Seamless Rubber Co. (New Haven, Conn.), has resigned his position with that company.

=The Victor Rubber Co. (Springfield, Ohio) are doing a fine business in small mold work, mats, and treads—lines that most of the tire factories get into sooner or later.

=The new plant of the Consolidated Rubber Tire Co. (Akron, Ohio) is nearly completed. Samuel S. Miller, of Akron, is the superintendent.

=Dr. A. M. Cole, of Akron, Ohio, who was one of the founders of the Western Linoleum Co., of the city named, is starting another plant in Youngstown, Ohio, known as the Ohio Linoleum Co.

=George Schlosser, formerly superintendent of the National India Rubber Co.'s factory (Bristol, R. I.), and more recently connected with the Apsley Rubber Co. (Hudson, Mass.), has been appointed assistant superintendent of the "Alice" mill of the Woonsocket Rubber Co. (Woonsocket, R. I.) Both the

Woonsocket factories are under the charge of one superintendent—Frederick T. Comee.

=The Manhattan Rubber Manufacturing Co. are opening a fine store at No. 103 Lake street, Chicago, where they will carry a full line of mechanical rubber goods. The store will be in charge of F. D. Henderson and Mr. Grosscurth, the first formerly Chicago manager for the Boston Woven Hose and Rubber Co., and the second for the Gutta Percha and Rubber Manufacturing Co.

=The New York office of the Empire Rubber Manufacturing Co. (No. 88-90 Reade street), will be in charge, from January 1, of Mr. S. V. B. Brewster, as manager. Mr. Brewster has been connected with the New York office of the Empire Rubber Manufacturing Co. since 1896.

LATE CIRCULARS TO THE RUBBER SHOE TRADE.

THE following circulars were issued to the jobbing trade from the New York offices of the United States Rubber Co., under the date of December 20:

GENTLEMEN: We have decided to discontinue the sale of Knit and Felt Boots, in combination with Lumbermen's Overs, after January 1, 1901. We trust that the price for Lumbermen's Overs, for the coming season; the conditions of trade and your ability to supply yourselves with Felt and Knit Boots, Socks, Stockings, etc., will enable you to put up such combinations as will meet the wants of your trade.

In this connection, would say, we will be in a position to offer you Knit and Felt Boots separately, at prices which may aid you in preparing your own combinations. Socks and Stockings, we shall not be able to offer you.

In view of the above, will you kindly advise immediately upon receipt of this letter, whether you wish us to cancel the unfilled balance of your Combination orders at once? otherwise, we shall continue to ship on your orders until January first, and cancel the unfilled balance on that date. Very truly yours, UNITED STATES RUBBER COMPANY.

GENTLEMEN: In view of the proposed action of this Company in regard to the price of goods, after January 3, 1901, we feel that you will appreciate our suggestion that you make such arrangements in connection with your organization of salesmen, as will enable you to communicate with them on receipt of detailed information, which we trust will be in your hands promptly, after the above-mentioned date.

In order to facilitate the adjustment of accounts at that time, you are hereby requested to take, on January 3, an accurate inventory of your stock on hand, in full and unbroken cases, and as soon after that date as possible, submit same to us on affidavit sheets which will be sent you.

Very truly yours, UNITED STATES RUBBER COMPANY.

REVIEW OF THE CRUDE RUBBER MARKET.

PRICES have been almost without fluctuation during the month. There has been only a slight and gradual tendency toward a lower level, the net result of which is a decline of from 1 to 2 cents on some of the Pará grades, while we quote Islands coarse without change. Some of the Centrals show a decline of 2 cents; East Indian is quoted without change; and the tendency in Africans has been slightly downward. The consumption has been less than normal in the rubber shoe industry, some of the more important factories running reduced "tickets," on account of the prospects for continued "open" weather. Most of the factories closed on Saturday, December 22, some announcing that they would remain closed for a week, some for ten days, and others for two weeks. The mechanical goods factories, however, have been more active, the condition of business being generally good in this branch. Good demand for rubber is reported

from Europe. Stocks are small at initial markets, except at Antwerp. It is possible that the movement reported elsewhere in this paper, to consolidate the rubber importing interests at New York, will tend to make manufacturers slow buyers until the exact nature of the new enterprise is understood. Scrap rubber remains high priced, which indicates a good demand for manufacturers' materials. Car load lots of old shoes are quoted at 8¼@9¼ cents, and some dealers are reported to be holding out for higher figures.

Arrivals at Pará during the first 27 days of December amounted to 2825 tons. This gives a total since July 1 less than the total receipts for the last six months of the three years preceding, as follows:

1900.	1899.	1898.	1897.
10,420	11,085	11,230	11,440

Recent arrivals have been on a larger scale, however.

Quotations in New York on December 29 were:

PARÁ.		AFRICAN.	
Islands, fine, new....	87 @88	Tongues.....	54 @55
Islands, fine, old....	90 @91	Sierra Leone.....	65 @66
Upriver, fine, new....	92 @93	Benguella.....	58 @59
Upriver, fine, old....	95 @96	Congo ball.....	55 @56
Islands, coarse, new....	53 @54	Cameroon ball.....	54 @55
Islands, coarse, old....	60 @61	Flake and lumps.....	42 @43
Upriver, coarse, new....	68 @69	Accra flake.....	18 @19
Upriver, coarse, old....	69 @70	Accra buttons.....	55 @56
Caucho (Peruvian) sheet	53 @54	Accra strips.....	60 @61
Caucho (Peruvian) strip		Lagos buttons.....	55 @56
none imported now.		Lagos strips.....	60 @61
Caucho (Peruvian) ball	65 @66	Liberian flake.....	@
CENTRALS.		Madagascar, pinky....	@
Esmeralda, sausage....	61 @62	Madagascar, black....	@
Guayaquil, strip.....	53 @54	GUTTA-PERCHA.	
Nicaragua, scrap....	61 @62	Fine grade.....	1.75
Mangabeira, sheet....	46 @48	Medium.....	1.45
EAST INDIAN.		Hard white.....	1.20
Assam.....	32 @33	Lower sorts.....	65
Borneo.....	37 @48	Balata.....	

Late Pará cables quote:

	Per Kilo		Per Kilo
Islands, fine.....	68700	Upriver, fine.....	78800
Islands, coarse.....	28700	Upriver, coarse.....	48800

Exchange 10 d.

NEW YORK PRICES FOR NOVEMBER (NEW RUBBER.)

	1900.	1899.	1898.
Upriver, fine.....	93 @ 97	1.05 @ 1.11	95 @ 96
Upriver, coarse.....	68 @ 70	84 @ 90	83 @ 87
Islands, fine.....	89 @ 94	99 @ 1.08	89 @ 95
Islands, coarse.....	52 @ 57	64 @ 70	62 @ 67
Cametá, coarse.....	55 @ 56	64 1/2 @ 70	66 @ 68

STATISTICS OF PARA RUBBER (METRIC TONS).

NEW YORK.		PARÁ.		ENGLAND.	
		Fine and Medium.	Coarse.	1900.	1899.
Stocks, October 31.....	521	58	=	579	230
Arrivals, November.....	536	338	=	874	1390
Aggregating.....	1057	396	=	1453	1620
Deliveries, November.....	553	321	=	874	1314
Stocks, November 30.....	504	78	=	579	306

	1900.	1899.	1898.	1900.	1899.	1898.
Stocks, October 31...	415	537	320	930	495	855
Arrivals, November..	2172	2600	2470	745	865	1060
Aggregating.....	2587	3137	2700	1675	1360	1915
Deliveries, November..	1977	2777	2485	725	925	1000
Stocks, Nov. 30..	610	360	305	950	435	915

	1900.	1899.	1898.
World's supply, Nov. 30 (excluding Caucho).....	3397	2362	2661
Pará receipts, July 1 to November 30.....	7595	8485	8630
Afloat from Pará to United States, Nov. 30....	588	401	
Afloat from Pará to Europe, November 30....	670	860	

In relation to the financial situation Albert B. Beers, broker in India rubber, No. 58 William street, New York, advises us as follows:

"The condition of the money market during December has been but little changed from what it was in November as to rates, which have remained at 5 @ 5 1/2 per cent. for the best rubber paper, and 5 1/2 @ 6, and in some instances 6 1/2 per cent. for names not so well known, but the demand has been much lighter, most of the city banks being out of the market and many out of town ones in the same condition, or buying very sparingly."

Liverpool.

WILLIAM WRIGHT & Co. report [December 1]; Fine Pará.—Prices have still further declined from last month, and the de-

mand on the whole has been dull, although the crop receipts are rather under than above the average. The scarcity of money in Brazil has forced receivers to accept low rates; how long this will continue remains to be seen. Meantime manufacturers are acting cautiously, and watching the course of the market, which further adds to the dull state of trade. Sales spot only total [for November] 70 tons Upriver 4s. to 4s. 1d. to 3s. 10 1/2 d. for new; 4s. 0 1/2 d. to 4s. 2d. to 4s. 1d. for old; Islands new 3s. 10d.; old, 3s. 11 1/2 d. Africans have been in better demand throughout the month, and a good business has been done at declining prices.

J. J. Fischer & Co., Limited, report Liverpool stocks:

	Aug. 31.	Sept. 30.	Oct. 31.	Nov. 30.
Pará: Fine.....	864 tons	639 tons	673 tons	675 tons
Medium.....	85 "	66 "	73 "	89 "
Negroheads.....	286 "	192 "	189 "	190 "
African.....	710 "	725 "	789 "	802 "
Peruvian.....	144 "	132 "	102 "	89 "
Mangabeira.....	195 pkgs	445 pkgs	458 pkgs	408 pkgs
Pernambuco.....	41 "	41 "	51 "	76 "
Ceará.....	1393 "	1166 "	1085 "	1106 "
Manicoba.....	575 "	524 "	901 "	88 "
Assaree.....	166 "	241 "	243 "	252 "
Mollendo.....	156 "	356 "	222 "	90 "

London.

JACKSON & TILL, under date of December 1, report stocks:

	1900.	1899.	1898.
Pará sorts..... (English tons)	—	—	—
Borneo.....	217	155	162
Assam and Rangoon.....	31	21	65
Other sorts.....	782	443	520
Total.....	1030	619	747

	1900.	1899.	1898.
Pará.....	941	431	917
Other sorts.....	1090	739	630
Total, United Kingdom.....	3061	1789	2294
Total, November 1.....	3040	1860	2126
Total, October 1.....	2846	1831	1841
Total, September 1.....	3170	1988	1546
Total, August 1.....	3645	1878	1469

PRICES PAID DURING NOVEMBER.

	1900.	1899.	1898.
Pará fine, hard.....	3/10 1/2 @ 4/1	4/4 @ 4/8	3/9 1/2 @ 4/1
Do soft.....	3/9 1/2 @ 3/11	4/3 1/2 @ 4/6 1/2	2/8
Negroheads, Islands.....	2/1 1/2	2/8 1/2	3/5 @ 3/7
Do scrappy.....	2/9 1/2 @ 2/10 1/2	3/6 @ 3/8	4/2
Bolivian.....	No sales.	4/5 1/2 @ 4/7 1/2	
Old Upriver.....	4/0 1/2 @ 4/2		

German Crude Rubber Movement.

[JANUARY 1 TO SEPTEMBER 30—OFFICIALLY REPORTED.]

	1898.	1899.	1900.
Imports..... pounds.	16,715,820	22,833,360	22,523,160
Exports.....	3,902,580	7,777,220	7,353,280
Net imports.....	12,813,240	15,056,140	15,169,880

Bordeaux.

THE sanitary measures to prevent the yellow fever from reaching the Soudan having been suspended, the arrivals of rubber from that source are taking again their normal course. There arrived at Bordeaux during November:

By ss. Ville de Pernambuco—Soudan twists.....	kilograms.	11,000
Soudan niggers.....		2,000
Conakry twists.....		250
Conakry niggers.....		1,200
By ss. Richelieu—Soudan.....		11,000
Cassamance.....		15,000
By ss. Ville de Mascie—Soudan.....		6,000
Conakry.....		5,000
Grand Bassam.....		2,000
By ss. Canarias—Madagascar (Fort Dauphin).....		500
Via Marseilles—Madagascar (Majunga).....		2,000

Norrméa.....	400
Cassamance.....	500
Java.....	1,500

Totalkilograms. 58,300

Stocks at the end of November were: Java, 5000 kilograms; Colon, 200; Soudan, 11,000; Cassamance, 15,000; Madagascar, 3000; Nouméa, 400; total, 34,600 kilograms. With the exception of lower prices for inferior grades, prices were little changed during November. Sales have been made as follows:

Twists.....	francs 7.00@7.70
Niggers (generally earthy).....	5.00@5.50
Cassamance, A. P. F.....	7.70
A.....	7.00
A. M.....	6.30
B.....	5.00
C.....	4.20
Madagascar (Majunga) large balls.....	6.50@6.70
Madagascar (Fort Dauphin) generally earthy	5.00@5.40
Nouméa, fine.....	8.50@9.00

The customs statistics show a steady rate of growth in arrivals at this port. We are convinced that Bordeaux is destined to become an important rubber market owing to our geographical situation with regard to West Africa and to the enterprise of the firms of this city who have branches in the colonies. Imports for three years past have been as follows:

	1897.	1898.	1899.
<i>Importations Direct:</i>			
Sénégal, Soudan, Conakry.....	14,674	51,847	262,120
West Coast of Africa.....		8,579	30,983
British India.....	10,687		
Dutch India.....			3,822
Madagascar.....	9,906	2,604	1,982
Brazil.....	7,867	6,685	2,404
Colombia.....	7,446	1,012	32,550
Mexico.....	724	148	1,398
Venezuela.....	420	492	73
Argentina.....		2,484	7,559
Other countries.....		15,158	5,357
<i>From Other Markets:</i>			
Liverpool.....	76,752	67,930	62,871
Hamburg.....	23,788	48,041	35,916
Antwerp.....	322	1,230	
Total.....	152,586	206,783	445,035

P. CHAUMEL.

Antwerp.

TO THE EDITOR OF THE INDIA RUBBER WORLD: At the sales on December 7 out of 543 tons offered, 318 tons were sold at an average decline of 50 centimes—or 5 to 6 per cent.—on valuations. The best prices were paid for Mongalla, Upper Congo, and Kassal sorts, which sold at from 35 to 40 centimes below valuations. Loporis were irregular in price and sold down to 85 centimes, or 10 per cent. below valuation. Of a lot of 47 tons valued at 8.50 francs, 20 tons were sold at 7.75 francs (average) and 27 tons at 7.65 francs. Of another lot of 74 tons valued at 8 francs, 10 tons were sold at 7.60 francs, and the remainder at 7.45 francs. The United States and England seemed to be the principal buyers. Stocks remaining amount to 732 tons at this writing.

C. SCHMID & CO.

Antwerp, Belgium, December 8, 1900.

THE latest circular from G. van der Kerchove (Antwerp) says: "By a late steamer the Société Agricole de l'Alima (French Congo) have imported their first rubber, and though the quantity is too small to permit of a definite judgment, we may predict for the products of this enterprise a most favorable future. The company should direct their especial care towards bettering the drying process and, this desideratum being realized, the Alima rubbers will rival in quality the finest white kinds of the Equateur district (Congo). We shall soon have the opportunity to speak of the other kinds from the French Congo."

"The Société Anonyme Comptoir des Produits Coloniales are actually importing rubber from Laos. It is similar to Rangoon, well prepared—in other words, rubbers that are in good condition."

"The Compagnie Coloniale de la Côte d'Or (Gold Coast) have just received the first shipment of rubber forthcoming from their concessions. Rarely have we had the opportunity to see such fine goods coming from the Gold Coast. Their preparation has been most careful, and what is a rare occurrence with goods from those parts, the rubber is relatively dry and well pressed."

ANTWERP RUBBER STATISTICS FOR NOVEMBER. [By courtesy of EMILE GRISAR.]

DETAILS.	1900.	1899.	1898.	1897.	1896.
Stocks, Oct. 31 Kilos	900,047	148,738	234,651	274,410	121,036
Arrivals, November.	473,404	150,196	211,776	113,105	183,371
Aggregating.....	1,382,451	298,934	446,427	387,515	304,407
Sales in November	317,805	119,156	176,112	204,300	133,755
Stocks, November 30	1,064,646	179,778	270,315	183,215	170,652
Arrivals since Jan. 1.	5,527,900	3,083,529	1,793,722	1,594,274	1,007,892
Sales since January 1	4,755,245	3,167,091	1,617,870	1,550,687	926,094

ARRIVALS AT ANTWERP.

NOV. 20.—By the steamer *Stanleyville*, from the Congo:

Société A B I R—Lopori ..	kilograms	81,000
Bunge & Co. (Domaine privé Etat du Congo).....		89,000
Bunge & Co. (Société Anversoise).....		65,000
Bunge & Co. (Société Equatoriale Congolaise).....		9,500
Bunge & Co. (Société Isanghi).....		24,500
Société Coloniale Anversoise—Haut Congo.....		74,200
Société Andréa.....		1,000
Ch. Dethier (Société Belgika).....		1,300
Crédit Commercial Congolais.....		125
Crédit Commercial Congolais (La Lulongo).....		10,000
Société Baniembé ..		100
		355,725

DEC. 12.—By the steamer *Leopoldville*, from the Congo:

Société A B I R.....	kilograms	23,280
Domaine privé (Congo Free State).....		117,000
Comp. Commerciale des Colonies (Cie. Française du Congo).....		2,500
Ch. Dethier (Société Belgika).....		3,000
Ch. Dethier (Haute Sangha).....		2,000
Société Coloniale Anversoise (Haut Congo) ..		10,899
W. Mallinckrodt & Co. (Alimaïenne).....		512
		159,191

Para.

EXPORTS during November, 1900 (in kilograms):

FROM—		TO—	
Pará.....	1,448,825	United States.....	1,063,425
Manaos.....	553,157	England.....	799,045
Iquitos.....		Continent.....	139,520

Total 2,001,990 Total..... 2,001,990

Kanthack & Co. report [December 3]: "Business has lately shown some signs of expansion, and as the inquiry has become more general, it may be expected that the increasing supplies will meet with an improved demand, particularly as the decline on the consuming markets has established an easier range of values. Transactions have been facilitated by lower exchange, which acted favorably on currency prices, notwithstanding the drop in values."

Under date of December 11 the same firm report: "The hopeful expectation recently entertained for the development of increased animation has again been somewhat damped by advices of a fresh decline from the consuming markets, whereas it was thought that the delayed receipts would have the contrary effect. The supplies from the Upriver districts being retarded, the volume of business has remained restricted and the

demand has had to satisfy itself chiefly from Islands rubber."

Iquitos.

EXPORTS by the steamer *Javary*, November 19 (in kilograms):

SHIPPERS.	Fine.	Medium.	Coarse.	Caucho.	Sernamby.	Total.
Venancio F. Pereira*	1996	—	518	—	—	2514
Adolfus Morey & Co.*	3912	—	1542	—	461	5915
L. Ph. Morey y Hijos*	3101	—	—	—	—	3101
G. Delgado y Hijos*	845	—	536	—	—	1381
Kahn & Pollack*	8491	504	2441	708	1811	14045
Marius & Levy*	8981	1261	648	192	—	11082
David Cazes*	—	—	822	990	3638	5450
Wesche & Co.*	16667	—	4747	311	3533	25258
Kahn & Co.*	16488	7553	6897	510	2325	33773
M. Rocha Hijos*	1537	165	1265	1260	1007	5234
G. Delgado y Hijos†	662	—	—	—	—	662
Banister Hermanos†	609	—	132	—	—	741
Louis Romagnoli†	1902	—	—	—	—	1902
Machado y Teixeira†	5420	—	581	—	1024	7025
Venancio F. Pereira†	2731	—	—	—	—	2731
Adolphus Morey & Co†	1932	24	858	138	—	2952
M. Rocha y Hijos†	1696	—	—	—	—	1696
L. Ph. Morey y Hijos†	7311	—	2646	—	729	10686
Pinto Hermanos†	5319	—	1876	191	3600	10986
Hernandez Magne & Co†	5499	—	4022	1812	4045	15388
David Cazes†	—	—	—	—	2047	2047
Total	95099	9507	29531	6212	24220	164569

* For Havre. 62018 9483 19416 4061 12775 107753
 † For Liverpool. 33081 24 10115 2151 9398 54769
 ‡ For New York. — — — — 2047 2047

Mangabeira Rubber.

EXPORTS from São Paulo, Brazil, during October are thus reported by Otto Schlodtmann, all going to Hamburg:

Schlodtmann & Arnold.	kilograms	2631
Zerener, Bulow & Co.		2258
Theodor Wille & Co.		2134 7023

The commission firm of Schlodtmann & Arnold, at São

Paulo and Pernambuco, has been dissolved by the retirement of Senhor José Arnold. The business will be continued under the name of Otto Schlodtmann.

IMPORTS FROM PARA AT NEW YORK.

[The Figures Denote Weights in Pounds.]

December 4.—By the steamer *Amazonense* from Manáos and Pará:

IMPORTERS.	Fine.	Medium.	Coarse.	Caucho.	Total.
New York Commercial Co	246,000	37,700	113,700	1,200=	398,600
Reimers & Co.	160,000	26,200	100,100	600=	286,900
Albert T. Morse & Co.	122,400	24,600	91,000	4,600=	242,600
Crude Rubber Co.	83,600	17,200	45,500	5,600=	151,300
Edmund Reeks & Co.	30,700	2,800	22,100	—	55,600
Otto G. Mayer & Co.	30,500	2,700	7,700	—	40,900
Boston Rubber Shoe Co.	14,000	6,400	8,000	300=	28,700
Lawrence Johnson & Co.	12,000	1,500	13,900	—	27,400
G. Amsinck & Co.	2,700	—	—	—	2,700

Total. 701,300 119,100 402,000 12,300=1,234,700

December 15.—By the steamer *Hildebrand*, from Manáos and Pará:

New York Commercial Co.	292,900	47,400	132,700	2,700=	475,700
Albert T. Morse & Co.	126,900	22,800	114,400	9,600=	273,700
Reimers & Co.	170,700	26,100	68,200	—	265,000
Crude Rubber Co.	117,700	15,100	30,700	—	163,500
Boston Rubber Shoe Co.	53,700	10,900	14,400	—	79,000
Otto G. Mayer & Co.	17,600	2,700	16,400	—	36,700
Hagemeyer & Brunn.	3,300	—	400	—	3,700

Total. 782,800 125,000 377,200 12,300=1,297,300

December 24.—By the steamer *Jaffa*, from Pará:

Reimers & Co.	125,000	42,500	68,200	—	335,700
New York Commercial Co.	97,000	25,700	81,900	3,000=	207,600
Crude Rubber Co.	85,600	8,700	38,700	—	133,000
A. T. Morse & Co.	7,500	2,900	31,000	—	41,400
Otto G. Mayer & Co.	24,000	1,400	10,300	—	35,700
Boston Rubber Shoe Co.	17,300	6,400	9,300	300=	33,300
Lawrence Johnson & Co.	—	—	11,400	—	11,400
Hagemeyer & Brunn.	3,000	—	800	—	3,800

Total. 359,400 87,600 251,600 3,300=701,900

[NOTE.—The steamer *Lishonense* left Pará on December 18, having on board for New York 406 tons; due December 30.]

PARA RUBBER VIA EUROPE.

NOV. 26.—By the <i>Campana</i> =Liverpool:	POUNDS.
Reimers & Co. (Coarse).	13,500
Reimers & Co. (Caucho).	5,000 18,500
NOV. 30.—By the <i>Teutonic</i> =Liverpool:	
Reimers & Co. (Fine).	11,500
New York Commercial Co. (Fine).	11,500
Edmund Reeks & Co. (Fine).	12,700
Edmund Reeks & Co. (Coarse).	4,000 39,700
DEC. 3.—By the <i>Etruria</i> =Liverpool:	
George A. Alden & Co. (Fine).	3,000
Crude Rubber Co. (Fine).	3,000
Albert T. Morse & Co. (Coarse).	6,500
Reimers & Co. (Coarse).	7,000 19,500
DEC. 7.—By the <i>Germanic</i> =Liverpool:	
Reimers & Co. (Coarse).	7,000
Crude Rubber Co. (Coarse).	3,500
George A. Alden & Co. (Coarse).	3,500 14,000
DEC. 14.—By the <i>Majestic</i> =Liverpool:	
George A. Alden & Co. (Coarse).	5,000
Crude Rubber Co. (Coarse).	5,000
Livesey & Co. (Coarse).	4,000 14,000
DEC. 17.—By the <i>Umbria</i> =Liverpool:	
Reimers & Co. (Coarse).	2,500
Reimers & Co. (Caucho).	22,500
A. T. Morse & Co. (Coarse).	13,600 38,500

OTHER IMPORTS AT NEW YORK.

CENTRALS.

NOV. 23.—By <i>El Dorado</i> =New Orleans:	POUNDS.
A. T. Morse & Co.	3,000
Eggers & Heinlein.	4,000
W. R. Grace & Co.	200 7,200
NOV. 22.—By the <i>City of San Antonio</i> =Colon:	
Crude Rubber Co.	2,800
Piza Nephews & Co.	2,000
A. N. Rotholz.	1,400 6,800

CENTRALS—Continued.

NOV. 26.—By the <i>Vigilancia</i> =Mexico:	
E. Steiger & Co.	1,500
Tibbals & Blossom.	500
H. Marquardt & Co.	500 2,500
NOV. 24.—By the <i>Capri</i> =Bahia:	
J. H. Rossbach & Bros.	25,000
Lawrence Johnson & Co.	2,500
Flint, Eddy & Co.	1,000 28,500
NOV. 26.—By the <i>Cymric</i> =Liverpool:	
Lawrence Johnson & Co.	11,500
NOV. 27.—By the <i>Altat</i> =Savanilla:	
Kunhardt & Co.	2,500
G. Amsinck & Co.	1,500
Jimenez & Escobar.	300
Isaac Brandon & Bros.	200 4,500
NOV. 27.—By the <i>Alliance</i> =Colon:	
G. Amsinck & Co.	4,000
Silva Bosmeirs & Co.	2,200
Mosle Brothers.	1,800
Eggers & Heinlein.	1,200
Joseph F. McCall.	1,200
Harburger & Stack.	1,000 11,400
DEC. 1.—By the <i>Seguranc</i> =Mexico:	
E. Steiger & Co.	6,000
Fred Probst & Co.	1,000
H. Marquardt & Co.	1,000
L. Monjo, Jr. & Co.	200
H. W. Peabody & Co.	200 8,400
DEC. 3.—By the <i>Etruria</i> =Liverpool:	
Joseph Cantor.	7,000
DEC. 3.—By the <i>Olters</i> =Bahia:	
Lawrence Johnson & Co.	7,500
J. H. Rossbach & Bros.	2,000 9,500
DEC. 3.—By <i>El Norte</i> =New Orleans:	
A. T. Morse & Co.	1,500
A. N. Rotholz.	1,500
Eggers & Heinlein.	1,500 4,500
DEC. 4.—By the <i>Alene</i> =Greystown:	
A. P. Strout.	5,000

CENTRALS—Continued.

G. Amsinck & Co.	1,800
Lauman & Kemp.	300
New York Commercial Co.	100
For London, etc.	2,900 9,800
DEC. 4.—By the <i>Michigan</i> =Colon:	
Flint, Eddy & Co.	4,700
Eggers & Heinlein.	2,600
Roldan & Van Sickle.	2,100
L. N. Chemedlin & Co.	2,200
Nuess Hessel & Co.	1,600
W. R. Grace & Co.	1,100
Lauman & Kemp.	700
Pomares & Cushman.	500 15,500
DEC. 5.—By the <i>Financ</i> =Colon:	
Crude Rubber Co.	3,000
Isaac Brandon & Bros.	2,500
Piza Nephews & Co.	1,000 6,500
DEC. 6.—By <i>El Paso</i> =New Orleans:	
A. T. Morse & Co.	3,500
DEC. 10.—By the <i>Seneca</i> =Mexico:	
Flint, Eddy & Co.	6,500
H. Marquardt & Co.	1,500
P. Harmony Nephews & Co.	800 8,800
DEC. 11.—By the <i>Athos</i> =Savanilla:	
Flint, Eddy & Co.	3,000
Lawrence Johnson & Co.	900
W. H. Crossman & Bros.	500
For London.	5,000 9,400
DEC. 12.—By the <i>Niagara</i> =Colon:	
G. Amsinck & Co.	8,400
Hirzel, Feltman & Co.	7,300
Flint, Eddy & Co.	2,100
Crude Rubber Co.	2,000
Lawrence Johnson & Co.	1,100
Eggers & Heinlein.	300
D. N. Carrington.	300
Suzorte & Whitney.	300 21,800
DEC. 14.—By <i>El Dorado</i> =New Orleans:	
A. N. Rotholz.	2,800
Albert T. Morse & Co.	2,500
Harburger & Stack.	1,500
Eggers & Heinlein.	2,000

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CHADWICK LEAD WORKS
BOSTON.

PITCHER LEAD CO.
CHICAGO.

Mention The India Rubber World when you write.



CENTRALS—Continued.

Jimenez & Escobar.....	1,400	
G. Amsinck & Co.....	2,500	12,500
DEC. 14.—By the <i>Acanthus</i> =Colon:		
G. Amsinck & Co.....	12,000	
Flint, Eddy & Co.....	5,500	
Hirtel, Feliman & Co.....	5,000	
Dumarest & Co.....	3,000	
Roldan & Van Dickel.....	1,500	27,000
DEC. 17.—By the <i>Havana</i> =Mexico:		
Tibbals & Blossom.....	1,300	
H. W. Peabody & Co.....	1,000	
Jacobs & Allison.....	300	2,500
DEC. 18.—By the <i>Comus</i> =New Orleans:		
A. T. Morse & Co.....	11,000	
Egers & Heinlein.....	2,500	13,500
DEC. 19.—By the <i>Alleghany</i> =Greystown:		
A. P. Strout.....	5,000	
G. Amsinck & Co.....	3,000	
Andreas & Co.....	2,000	
Samper & Co.....	3,000	
Kunhardt & Co.....	700	
W. H. Crossman & Bros.....	400	
Lawrence Johnson & Co.....	300	
For London.....	2,000	18,500
DEC. 19.—By the <i>Bellagio</i> =Pernambuco:		
Lawrence Johnson & Co.....	8,000	
DEC. 19.—By the <i>Advances</i> =Colon:		
Crude Rubber Co.....	2,800	
DEC. 20.—By the <i>El Norte</i> =New Orleans:		
W. R. Grace & Co.....	3,000	
DEC. 21.—By the <i>Phidias</i> =Bahia:		
J. H. Rossbach & Bros.....		25,000

AFRICANS.

NOV. 26.—By the <i>Campahia</i> =Liverpool:		
Livesey & Co.....	24,000	
George A. Alden & Co.....	6,500	
Crude Rubber Co.....	6,500	
Reimers & Co.....	2,500	39,500
NOV. 26.—By the <i>Statendam</i> =Rotterdam:		
Reimers & Co.....		33,000
NOV. 28.—By the <i>Cap Frio</i> =Hamburg:		
Reimers & Co.....	62,500	
A. T. Morse & Co.....	16,000	
George A. Alden & Co.....	5,500	84,000
NOV. 30.—By the <i>Teutonic</i> =Liverpool:		
Reimers & Co.....		18,000
NOV. 30.—By the <i>Philadelphia</i> =Liverpool:		
George A. Alden & Co.....	34,000	
Crude Rubber Co.....	33,000	67,000
NOV. 30.—By the <i>Noordland</i> =Antwerp:		
Albert T. Morse & Co.....	24,000	
George A. Alden & Co.....	11,000	
Crude Rubber Co.....	11,000	46,000

AFRICANS—Continued.

DEC. 3.—By the <i>Potsdam</i> =Rotterdam:		
Reimers & Co.....		11,500
DEC. 3.—By the <i>Etruria</i> =Liverpool:		
George A. Alden & Co.....	6,000	
Crude Rubber Co.....	6,000	
Reimers & Co.....	3,500	15,500
DEC. 7.—By the <i>Dona Maria</i> =Lisbon:		
A. T. Morse & Co.....		33,000
DEC. 7.—By the <i>Germanic</i> =Liverpool:		
Livesey & Co.....		17,000
DEC. 8.—By the <i>Lucania</i> =Liverpool:		
Livesey & Co.....	16,500	
George A. Alden & Co.....	8,500	
Crude Rubber Co.....	8,000	
Reimers & Co.....	7,000	40,000
DEC. 11.—By the <i>Caledonian</i> =Liverpool:		
Reimers & Co.....		17,000
DEC. 13.—By the <i>Southwark</i> =Antwerp:		
Albert T. Morse & Co.....	4,500	
DEC. 14.—By the <i>Majestic</i> =Liverpool:		
Reimers & Co.....	3,000	
Livesey & Co.....	1,500	
Joseph Cantor.....	5,000	9,500
DEC. 17.—By the <i>Umbria</i> =Liverpool:		
George A. Alden & Co.....	11,000	
Crude Rubber Co.....	11,000	
Livesey & Co.....	12,000	34,000
DEC. 20.—By the <i>Vaderland</i> =Antwerp:		
Albert T. Morse & Co.....		22,000
DEC. 21.—By the <i>Bulgaria</i> =Hamburg:		
Livesey & Co.....	4,500	

EAST INDIAN.

DEC. 4.—By the <i>Orwell</i> =Singapore:		
Reimers & Co.....		6,000
DEC. 5.—By the <i>Menominee</i> =London:		
Joseph Cantor.....		24,000
DEC. 20.—By the <i>Maria Larrinaga</i> =Singapore:		
George A. Alden & Co.....		11,500
DEC. 21.—By the <i>Bulgaria</i> =Hamburg:		
George A. Alden & Co.....		11,500
DEC. 22.—By the <i>Astoria</i> =Singapore:		
D. P. Cruikshank.....		11,000

PONTIANAK.

DEC. 4.—By the <i>Orwell</i> =Singapore:		
Reimers & Co.....	675,000	
George A. Alden & Co.....	300,000	
Kimendorst & Co.....	35,000	
Otto G. Mayer & Co.....	43,000	1,053,000
DEC. 22.—By the <i>Astoria</i> =Singapore:		
Reimers & Co.....	405,000	
George A. Alden & Co.....	285,000	700,000

GUTTA-PERCHA AND BALATA.

DEC. 3.—By the <i>Patricia</i> =Hamburg:		
Robert Bellan & Co.....		3,000
DEC. 8.—By the <i>Barcelona</i> =Hamburg:		
George A. Alden & Co.....		2,500
BALATA.		
Nov. 26.—By the <i>Grenada</i> =Trinidad:		
Middletown & Co.....		500
DEC. 12.—By the <i>Ethiopia</i> =Glasgow:		
Earle Brothers.....		7,000
DEC. 22.—By the <i>Maratal</i> =Trinidad:		
George A. Alden & Co.....		11,000

CUSTOM HOUSE FIGURES.

PORT OF NEW YORK—NOVEMBER.

Imports:	POUNDS.	VALUE.
India-rubber.....	3,967,269	\$1,810,836
Gutta-percha.....	55,638	28,610
Gutta-jelatong (Pontianak)....	697,536	20,625
Total.....	4,720,443	\$1,859,071
Exports:		
India-rubber.....	30,091	\$9,630
Reclaimed rubber.....	53,713	7,458
Rubber Scrap Imported.....	818,124	\$60,005

BOSTON ARRIVALS.

NOV. 7.—By the <i>Winfredian</i> =Liverpool:		
Livesey & Co.—African.....		119,27
NOV. 8.—By the <i>Ivernia</i> =Liverpool:		
Livesey & Co.—African.....		11,028
NOV. 7.—By the <i>Bengala</i> =Hamburg:		
George A. Alden & Co.—Balata.....		2,291
[Improperly included by the Customs officials in the arrivals of India-rubber.]		
NOV. 27.—By the <i>Sylvania</i> =Liverpool:		
Reimers & Co.—African.....		10,449
POUNDS. VALUE.		
Total, January.....	105,946	\$69,329
Total, February.....	109,763	65,290
Total, March.....	81,479	55,950
Total, April.....	141,398	90,607
Total, May.....	53,283	26,126
Total, June.....	30,376	22,016
Total, July.....	115,855	56,897
Total, August.....	127,972	71,851
Total, September.....	223,215	143,009
Total, October.....	66,516	42,275
Total, November.....	35,680	16,968

GUTTA-PERCHA.

NOV. 27.—By the <i>Cambrian</i> =London:		
Reimers & Co.....		5,664

NOVEMBER EXPORTS OF INDIA-RUBBER FROM PARA.

IN KILOGRAMS. 1000 KILOGRAMS=2204.6 POUNDS.

EXPORTERS.	UNITED STATES.					EUROPE.					TOTAL.
	FINE.	MEDIUM.	COARSE.	CAUCHO.	TOTAL.	FINE.	MEDIUM.	COARSE.	CAUCHO.	TOTAL.	
Adelbert H. Alden.....	208,943	27,204	99,890	1,614	337,651	57,960	11,440	23,520	—	92,920	430,571
Cmok, Prusse & Co.....	44,880	5,816	56,019	—	106,715	238,510	28,784	25,560	2,848	295,702	402,417
Frank da Costa & Co.....	67,456	13,219	108,900	1,650	191,225	47,370	5,292	14,320	—	66,982	258,207
The Sears Paré Rubber Co.....	69,670	9,159	34,402	4,902	118,133	—	—	—	—	—	118,133
Comptoir Coloniale Française ..	—	—	—	—	—	64,187	7,385	5,638	980	78,190	78,190
Rudolf Zietz.....	—	—	3,520	483	4,003	36,255	2,926	27,481	—	66,662	70,665
H. A. Astlett.....	28,247	3,285	14,112	271	45,915	—	—	—	—	—	45,915
Denis Crouan.....	3,740	—	3,840	—	7,580	7,990	2,890	9,860	—	20,740	28,320
Kanthack & Co.....	—	—	—	—	—	5,398	909	3,249	—	9,556	9,556
Sundry small shippers.....	—	—	—	—	—	5,620	308	933	—	6,861	6,861
Direct from Manaos.....	167,763	30,832	47,220	6,388	252,203	200,989	41,774	41,191	16,998	300,952	553,155
Total for November.....	590,699	89,515	367,903	15,308	1,063,425	664,279	101,708	151,752	20,826	938,565	2,001,990
Total for October.....	717,837	122,568	397,125	37,647	1,275,227	728,319	100,881	213,245	77,186	1,119,631	2,394,858
Total for September.....	205,610	66,261	265,567	45,504	672,942	273,905	39,729	88,540	6,664	408,838	1,081,780
Total for August.....	376,963	45,039	193,344	7,697	623,643	486,763	86,959	146,159	71,472	791,353	1,414,996
Total for July.....	148,853	28,698	102,431	28,796	308,778	151,995	24,461	119,417	49,211	345,084	653,862
Total, January-June.....	2,633,971	467,106	1,603,010	471,294	5,175,381	3,050,250	636,986	1,177,656	490,236	5,355,128	10,530,509
Total for 1900.....	4,763,983	819,787	2,929,380	606,246	9,119,396	5,355,511	990,724	1,896,769	715,595	8,958,599	18,077,995

1901.

ATA.

POUNDS.

3,000

3,300

500

7,000

11,000

S.

R.

VALUE.

810,536

28,619

20,625

358,071

\$9,639

7,458

\$50,005

POUNDS.

119,27

11,028

2,391

Is in the

10,449

VALUE.

\$69,329

68,290

55,950

90,607

26,126

22,016

56,897

71,851

143,000

42,275

16,988

5,864

TOTAL.

30,571

02,417

58,207

18,133

78,190

70,665

45,915

28,320

9,556

6,861

53,155

01,990

94,858

81,780

14,996

53,868

30,509

777,995

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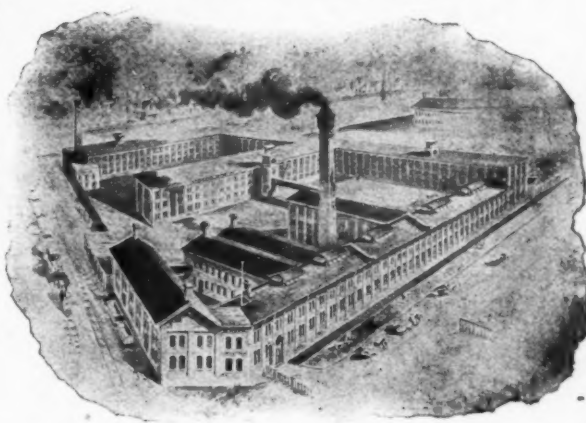


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High Grades of Cotton Fire Hose.
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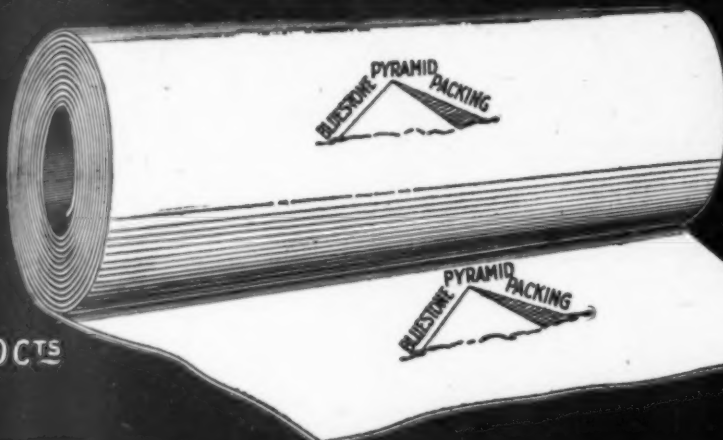
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WATER &
AND AIR &
PACKS EQUALLY
WELL FOR ALL
PRICE PER LB. 80 CTS



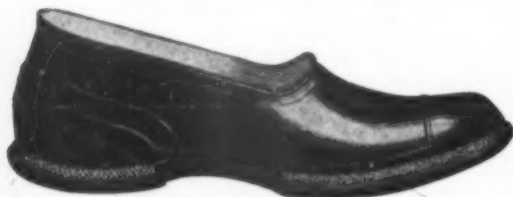
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PACKING MADE
THAT WILL LAST
AS LONG OR WITH-
STAND AS WELL
THE ACTION
OF STEAM
HEAT

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The best wearing and most serviceable
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DOUBLE STAYED at sole and heel
ROLLED SOLE
EXTRA QUALITY RUBBER

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